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COURSE AND PROGNOSIS OF ESSENTIAL HYPERTENSION

FOLLOW-UP OF 453 PATIENTS TEN YEARS AFTER ORIGINAL SERIES WAS CLOSED

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This paper summarizes the present status of a series of patients in whom essential hypertension was diagnosed from 10 to 12 or more years ago; no new patients have been added in the last 10 years. Two previous reports have been made on this series; one four years ago [1] and one six years ago.[2] Classification was originally made according to criteria previously outlined.[2] In brief, grade 1 included persons with minimal organic change, or none, as recognized by ordinary clinical examination in the three vital areas, head, heart, or kidneys; grade 2, those with definite or marked change, but no functional impairment; grade 3, those with organic change with functional impairment; and grade 4, those with papilledema. Classification was made according to maximum change found in any one or more areas without regard to elevation of blood pressure. A few patients were seen as long as 20 years ago; the majority, however, came under observation between 1935 and 1940. Ten years is the shortest observation period except for those who died.

Over a thousand patients were originally seen, but over 40% were excluded because they were seen only once or were observed too briefly, because classification was doubtful, because the diagnosis was glomerulonephritis or transient nervous hypertension, or, finally, because sympathectomy was performed. Six hundred forty-six persons were included in the original classifications.

Treatment was chiefly dietary (fat-excluded, low calory, or salt poor, or both; occasionally strict low sodium) together with mild sedation and sometimes potassium sulfocyanate. More recently, a few patients were maintained on the rice diet and some were given veratrum preparations. In general, treatment was according to conventional indications, the ordinary rules of good hygiene, and simple psychotherapy varied and adapted to the particular patient.[3] These patients are considered valid controls for comparison with the results of surgical treatment or with those of any single medical treatment consistently followed.

Figure 1 [1] shows the percentage of survivors at each check period. The dotted line indicates a rough graphical prediction, made after 8 years of treatment, of the per cent of survival expected at the end of 10 to 12 years. Observed survival was better than expected in each of the grades: grade 1, 58% expected, 64% observed; grade 2, 24% expected, 42% observed; grade 3, 2% expected, 11% observed; and grade 4, none expected, 4% observed. This indicates that there has been a general tendency for mortalities to decrease in later years.

It is obvious that there are definite differences in the observed mortalities of different grades and that there is considerable validity in the criteria on which the distinctions of grading rest. The duration of disease in living patients is much the same for all groups; it is determined chiefly by the fact that the patients have survived at least 10 years since the series was closed. The average duration in patients who died, measured from original inclusion in the study, varies greatly between grades, as does the proportion of original patients followed to the present: grade 1, 5.9 years' duration, 53% followed; grade 2, 4.4 years' duration, 62% followed; grade 3, 3.3 years' duration, 85% followed; and grade 4, one year duration, 95% followed. It is evident that success in follow-up increases with shorter average survival of dead patients. This is to be expected, since the combination of high mortality and early death allows less chance for loss from observation.

Death certificates of deceased patients and reports from attending physicians and from members of the family included, predominantly, factors associated with

The authors were assisted by Gertrude S. Roberts.
From the Massachusetts General Hospital Hypertension Clinic and the Harvard School of Public Health. This study was aided by the Dorothea Loofbourow Memorial Fund.

1. Palmer, R. S.; Loofbourow, D., and Doering, C. R.: Prognosis in Essential Hypertension: Eight-Year Follow-Up Study of 430 Patients on Conventional Medical Treatment, New England J. Med. **239**: 990-994 (Dec. 23) 1948.
2. Rogers, W. F., and Palmer, R. S.: Essential Hypertension: Prognosis and Comparison of Medical and Surgical Treatments, Am. Pract. **1**: 459-465 (May) 1947.
3. Palmer, R. S.: Psyche and Blood Pressure: 100 Mental Stress Tests and 50 Personality Surveys in Patients with Essential Hypertension, J. A. M. A. **144**: 295-298 (Sept. 23) 1950.

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hypertension as cause of death. This is not surprising, since the existence of hypertension was generally known to the person furnishing the information. The proportion of causes assigned to major groups under each grade are listed in table 1.

The original follow-up study made on our group of patients is inherently a life table study, and the curves in figure 1 are essentially curves of survival of four subgroups of patients starting with 100% of each subgroup admitted to the study in the beginning. The curves have considerable validity as they stand, in view of the fact that few or no patients were admitted to each subgroup after the first few years and none at all were added during the last 10. The study is not, therefore, greatly biased by having an excess of observations in the early years of experience. On the other hand, subgroups are not homogeneous as to age and sex or as to periods of observation, factors that may affect the results of the analysis. An additional study of the data has, therefore, been made on a life table basis in order to remove possible bias and to discover additional differences that might exist.

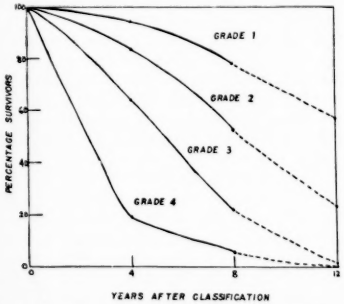

Fig. 1.—Percentage of survivors of each grade observed 4 and 8 years after classification (solid line) and estimated expected percentage of survivors at 12 years (broken line).

All studies of this kind suffer from the serious fault of incomplete follow-up. It must be assumed that the portion of the group lost from observation might be heavily weighted with patients who died, in which case the true mortality figures would be greater than those obtained from the remainder. On the other hand, if the lost group consisted mainly of patients who improved and, therefore, drifted away from treatment, the error would be in the opposite direction. Which error, if either, has occurred in this study is unknown. We feel that the exceptionally careful follow-up that preceded this study was more likely to turn up previously undiscovered death records than living patients who had disappeared. The fact that follow-up is more nearly complete in groups with highest mortalities lends additional strength to the assumption that actual mortalities are, if anything, somewhat less than those obtained from the data.

The first analysis was a study of person years (table 2).[4] It is based on the fact that there will be some deaths in any general population group followed over a period of time. The criterion of risk of a special group is then the ratio of its observed deaths, year by year, to the number of deaths that would have been expected in a group of the normal population made up in exactly the same way as to age, sex, and race. Expected deaths are easily calculated from life tables, and for this purpose we used the "United States 1939 to 1941" tables [5] for white men and women, respectively. The ratios obtained are abstracted in table 2.

TABLE 1.—*Causes of Death Listed for Patients with Hypertension*

	Cerebral, %	Heart, %	Kidney, %	Total, %	Unknown, %
Grade 1	40	35	2.5	77.5	5
Grade 2	33	33	10	76	15
Grade 3	34	46	11	91	3
Grade 4	23	29	40	92	4

Certain general conclusions may be drawn from these data. (*a*) Relative risk is highest in younger persons and decreases rapidly with age. Older women with milder grades seem certainly to be no worse off, as regards mortality, than the general population. (*b*) Women have definitely lower mortalities than do men, except for those in grade 4. Women in the first three grades tend to be somewhat older than men. The proportion of women decreases markedly from grade 1 to grade 4. It may be said that women appear to have a milder type of hypertension than men do and a slower rate of progression that leads to a higher mean age for women in each of the first three grades, especially when duration is taken into account. (*c*) Average age increases from grade 1 to grade 3 and indicates that, to some extent, each grade is a successive stage of the preceding one. There is, on the other hand, considerable evidence of a tendency for persons to remain in the grade in which classification was originally made. This would imply that there is considerable variation in the original characteristics of hypertension and that different degrees of severity tend to exist from the beginning. Certainly at least some of the 36% of grade 1 patients who died, as well as some of the 58%

TABLE 2.—*Ratio of Observed to Expected Deaths By Person Years*

	Grade 1		Grade 2		Grade 3		Grade 4	
Age, Yr.	Men	Women	Men	Women	Men	Women	Men	Women
0-34	15.4	11.6	...	68.8	183.1	101.6	331.8	298.4
35-54	4.3	4.9	3.8	9.6	32.1	34.7	84.4	119.3
55-74	2.9	0.7	3.9	2.6	6.2	4.9	80.6	28.9
75 and over	7.2	0.5	...	0.8	2.5	1.4	.....	.....
Total	3.8	1.3	3.9	2.7	9.4	5.6	100.1	139.3
Persons	40	70	29	59	99	102	32	22
Person years	349	680	190	472	349	515	36	37
Mean age *	44.2	47.0	53.5	52.6	52.6	55.0	39.2	38.5

* Based on age at entry to series.

4. Complete tables and original data in mimeographed form may be obtained from the authors.

5. United States Department of Commerce, Bureau of the Census: Sixteenth Census of the United States: 1940, United States Life Tables and Actuarial Tables, 1939-1941, by Thomas N. E. Greville, prepared under the supervision of Halbert L. Dunn, Washington, D. C., United States Government Printing Office, 1946.

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of grade 2 must have advanced to severer types. Relative excesses of mortality decrease greatly, however, with advancing years, and the progression to severer types must be slow at higher ages. (*d*) Grade 4 presents a picture all its own. The patients tend to be affected earlier in life, and their hypertension tends to run a highly acute and lethal course.

TABLE 3.—*Death Rate Per 1,000 Person Years by Age and Duration of Disease*

Grade	1		2		3		4	
Duration, years	−5	5+	−5	5+	−5	5+	−1	1+
Age								
0-34	38	..	235	..	607	182	1000	429
35-54	23	44	59	57	289	279	584	791
55-74	53	31	111	76	167	174	1000	1333
75 and over	85	110	167	32	183	170	....	...
Total	39	39	93	65	216	199	730	701
Person years	507	461	280	382	436	426	34	38
Deaths observed	22	18	26	25	94	85	25	27

The age categories of table 2 reflect increased duration as well as advancing age. The decreasing relative mortalities could, therefore, be connected with either age or duration, or both. In order to determine the important factor, a second tabulation was made and is abstracted in table 3.[4] In this table, sexes have been combined, but figures by age are split into two groups on the basis of duration of disease at time of entry into the study. In order to obtain groups of roughly similar size, the division was made at five years' duration for the first three grades and at one year for the fourth. It is somewhat surprising to find no consistent differences associated with duration of disease, with the single exception of the youngest patients in grade 4. In those, duration of less than a year is definitely associated with higher mortality.

It is true that duration rests on patients' statements and is, therefore, not clearly defined. There must be definite differences, however, in average duration between each two comparison groups; it is surprising not to find them connected with differences in observed mortality. It can only be concluded that mortality in hypertension varies greatly with age, but little with previous duration of disease at a given age.

TABLE 4.—*Ratio of Observed Survivors to Those Expected from Life Table* (l_x)

Years of Classification	Grade 1	2	3	4
0.5	0.998	0.962	0.885	0.502
2.5	0.960	0.889	0.549	0.094
4.5	0.941	0.704	0.393	0.076
6.5	0.896	0.661	0.336	0.054
8.5	0.831	0.592	0.266	0.055
10.5	0.798	0.589	0.180	0.037
12.5	0.815	0.566	0.162	

We tried another type of analysis, suggested by Berkson and Gage,[6] on these data. It is based on the proportion of each group originally classified by grade surviving year by year after inclusion in the study, and the result is, therefore, similar to the direct survival curves in figure 1. Survival is influenced, however, not only by the disease in question but by other forces of mortality connected with age and sex. Grade 3 patients, for example, would be expected to die at a faster rate than those in grade 1; differences in hypertension were disregarded merely because the groups were more heavily weighted with older men. In order to equalize such differences, observed survival is compared with the proportion surviving in groups made up of persons of the same age and sex drawn from the general population. United States life tables were used as the source of comparison groups.

The results of the analysis are abstracted in table 4 [4] and are graphed in figure 2. The curves are similar to those in figure 1, but they now refer, not to actual survivors, but to the ratio of survivors observed to those expected to survive in the general population. A horizontal line, therefore, does not mean absence of deaths but mortality at rates expected in a normal population. It can be seen that, in each group, patients die faster than expected and that this difference rapidly increases with grade. On the other hand, in each grade, the relative decrease slows markedly with the passage of years after inclusion in the study. Since the effects of increasing age and duration of hypertension are combined in this table it is impossible to determine the relative influence of each, but the previous analysis indicates that age is the more important factor. The simple shape and apparent homogeneity of the relative survival curves naturally lead to attempts to explain them on a basis of simple mathematical rationalization.

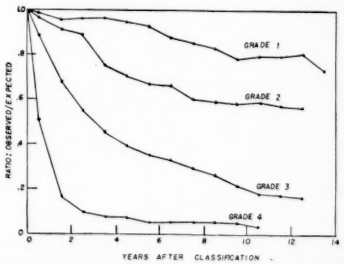

Fig. 2.—Ratio of observed survivals in each grade to expected (l_x) by annual intervals beginning six months after classification.

There are at least three hypotheses that may be applied to the analysis of the survival ratio curves. (*a*) There is a continous rate of decrease of survivors below expected. This seems to be the case in grade 1, in which some 20 per 1,000 survivors are lost each year, in addition to deaths normally expected. This would be a relatively large increase in young ages, but relatively a much smaller number as age advances. (*b*) There is a "cured" component that follows expected mortality rates, plus a remainder dying at a continuous, increased ratio. Berkson and Gage found that this described their data on postoperative cancer survival very well. Here grade 4 seems well described by this assumption; it is, however,

6. Berkson, J., and Gage, R. P.: Survival Curves for Cancer Patients Following Treatment, J. Am. Statistical A. **47**: 501-515 (Sept.) 1952.

much the smallest group, and no definite conclusions can be drawn. (*c*) Excess mortality itself follows a curve that starts high but continually decreases. A priori, this would seem to be the most logical assumption for a disease of this type. It actually furnishes the best description of the curve for grade 3, while either this one or the previous assumption (*b*) equally well describes observations on patients in grade 2.

There is little profit in arguing differences in assumptions or in their results as based on a limited series of cases. However, the statistical note that follows gives constants of the respective curves for each grade. The resulting curves under different assumptions are closely similar and can be used for the purpose of predicting survival in each grade for groups of patients under conservative treatment.

STATISTICAL NOTE

(*a*) Assumption of constant loss: $dy/dt = -by$ so $y = e^{-bt}$

Grade 1: $b = 0.0206$

(*b*) Assumption of normal group plus constant loss in remainder:

$dy/dt = -b(y - a)$ so $y = a + (1 - a)e^{-bt}$

	a	b
Grade 2	0.475	0.161
Grade 4	0.056	1.551

(*c*) Assumption of constantly decreasing rate of loss:

$dy/dt = -ay/(b + t)$ so $y = [b/(b + t)]^a$

	a	b
Grade 2	0.505	5.213
Grade 3	1.328	4.553

COMMENT

A number of questions are raised by this study. Are the good results in certain types of treatment determined largely by the selection of patients from grades of disease in which the prognosis is good in any case? Is the disease in persons with the best prognosis (such as those in grade 1) primarily neurogenic or functional, and does it tend to remain in the same grade without developing organic lesions, while excess mortality is due to hypertension that is primarily organic and that moves on to more serious conditions? Are mortality rates in grades 3 and 4 so high that treatment, in itself hazardous and uncomfortable, may be justified in an effort to prolong life? Is on the other hand, the use of potentially dangerous hypotensive agents indicated in milder degrees of hypertension in which the natural survival time is so long? Definitive answers to such questions must come from carefully controlled studies of survival in adequate numbers of patients treated by various methods.

SUMMARY AND CONCLUSIONS

This is a report on the survival of 453 patients with different degrees of essential hypertension who were first seen and classified by one of us (R. S. P.) more than 10 years ago and who were recently subjected to intensive follow-up. The essential validity of separation of cases into four grades according to clinical criteria has been established by this analysis as well as by two previous ones. The patients included may be regarded as a reasonably unbiased sample of the 10 or 15 million Americans suffering from hypertension, and the results of the analysis may be accepted as a base line for the results of conservative medical treatment with which other treatment results may be compared. Because of the inevitable loss of patients from observation, it is felt that mortality rates as given here may be somewhat exaggerated.

Several tentative conclusions may be made. 1. Relative risk is highest in young ages and decreases rapidly with age. 2. Mortality in women is definitely lower (except for those in grade 4), and increase of severity is slower. At higher ages in the milder grades, the mortality of women compares favorably with that of the general population. 3. Average age increases from grade 1 to grade 3. Each higher grade must, to some extent, be a later development of the previous one. 4. Duration of disease, apart from advancing age, does not seem to have any effect on mortality, except in grade 4 in which short duration is associated with higher mortality at youngest ages. 5. Survival rates relative to those of the general population follow simple patterns that may be expressed in basic mathematical terms. In this way, a basic expectation of survival may be established for any grade of disease, furnishing a base for comparison with the results of other methods of treatment. 6. With each increase in grade, patients die at a faster rate than that expected. In general, this increase in mortality tends to diminish with time under observation or higher ages.

55 Shattuck St. (15) (Dr. Muench).

Misdirective Counseling.—There are counseling visionaries and counseling realists. . . . One can correctly appraise a client's limitations as well as his abilities, interests, and aptitudes, can correctly interpret the job market, and yet participate with the client in making a crucial counseling mistake: the mistake of failing to take a penetrating view of the client's level of motivation. When a counselor looks back over his "great rehabilitations," he cannot but be impressed with the determination and will-to-succeed that distinguished each of them. Nor were these unusual or highly imaginative counseling cases of the 100-to-1-shot variety. Most probably they were ordinary programs involving the provision of some special training or special equipment, and leading toward an immediate and obtainable goal. What made these cases so startling was that after the first goal was reached the client went on and on under his own power. . . . But conversely, when the counselor looks back on so many of the other kinds of cases—the clients on whom was lavished so much of money, time, and attention, only to have them drop out or return to public assistance—then he is struck with the absence of a constructive motivation. Motivation is not to be confused with wish for status, or yearning. Motivation implies an overpowering will to do; it is action, not fantasy. Yet all too often the daydreams of the unable are treated by the more visionary of counselors as though these were mature interests, clamoring for release. . . . Not all individuals with I.Q. of 140 want to go to college; some of them are content to pump gas in a filling station and will expend no energy to go beyond that. It would be poor counseling to match the potential talent to the maximal job if the individual habitually operates on a lesser level. There is nothing terribly abnormal about squandering or wasting one's talent. . . . The wise counselor is not one who moralizes on what a client should do with his talents (and proceeds to build a plan around it); rather he seeks to determine what the client will do, and then assists him in a maximal adjustment thereto.—R. A. Peckham, Misdirective Counseling, *Journal of Rehabilitation*, May-June, 1953.

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CLINICAL USE OF HYDRALAZINE AND HEXAMETHONIUM IN TREATMENT OF HYPERTENSION

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It is our purpose to report the use of hydralazine (Apresoline) hydrochloride and hexamethonium (Bistrium) in clinical practice. Evaluation of side-effects, safety, best method of administration, and clinical response are stressed. Excellent papers also discussing the use of these drugs have been published during the last year.[1]

It was proved that all patients included in our series had hypertension. All had average blood pressures of 150/100 mm. Hg or more prior to therapy except one. This 26-year-old patient had a progressively rising pressure following acute glomerulonephritis and had a pretreatment average blood pressure of 150/96 mm. Hg. The maximum pressure was 300/180 mm. Hg. The majority of patients were from the practice of two of us. The rest were from the practices of other physicians on the staff of Wesley Memorial Hospital. Patients' ages ranged from 17 to 71 years. A few of the patients were entirely free of symptoms. The majority had one or more of the usual symptoms of hypertensive cardiovascular disease. Some originally were completely incapacitated and bedfast.

A thorough investigation to determine the cause of hypertension was conducted in all patients. The following laboratory data were obtained: chest roentgenogram, intravenous pyelogram, electrocardiogram, basal metabolic rate, routine urinalysis and hematological examination, urine culture, urine concentration test, urea clearance test, phenylsulfonphthalein excretion, benzodioxane or regitine test, amobarbital sodium test, serum nonprotein nitrogen, serum creatinine, fasting blood sugar, and sedimentation rate. A presumed cause of hypertension was found in only five: two had a history of acute glomerulonephritis without definite proof of residual renal involvement; one had polycystic kidneys; one had persistent hypertension following a severe toxemia of pregnancy; and one had intercapillary glomerulosclerosis. In addition, four patients were in the terminal phase of malignant hypertension.

In evaluation of therapeutic results, blood pressure readings were taken as follows. Previously recorded pressures, in most cases extending over several years, were averaged and used as the pretreatment level. All patients were ambulatory and carried on their usual activities except those with malignant hypertension; these were hospitalized part of the time. Pressure readings during therapy were taken in the office. At each visit, three to five readings were taken, and the figure for that day was recorded as the average. Pressures reported as therapeutic results are averages of those recorded on the last three consecutive visits. All pressures during therapy were taken by the same observer.

Diets included from one gram of sodium to as much as desired. Restricted sodium diets were used to treat or prevent edema from cardiac decompensation.

THERAPY WITH HYDRALAZINE

Pharmacology.—It is not within the scope of this paper to discuss completely the pharmacology of hydralazine hydrochloride. Its actions are not yet completely known, but its major actions are reported to be sedation of the vasopressor center,[2] blocking a hypertensive hormone,[3] increasing renal blood flow,[4] increasing cardiac output,[4] pooling blood selectively in the splanchnic system,[4] and partially blocking adrenergic impulses.[2b]

Side-Effects.—Side-effects observed in 100 patients over a period of 17 months (the average was 8 months per patient) included headache in 39; nausea, 20; tachycardia, 16; flushed face, 12; nasal congestion, 11; pitting edema of ankles, 9; periorbital edema, 7; vomiting, 7; insomnia, 7; dizziness, 6; fever (associated with 22% eosinophilia in 1), 4; chills, 4; myalgia, 3; overstimulation, 3; tightness of face, 2; blurred vision, 2; watery eyes, 2; postural hypotension, 2; anginal attack, 1; burning in chest, 1; and drowsiness, 1. Of these 100 patients, 50 are reported in the evaluation of hydralazine therapy, 14 are reported in the evaluation of combined therapy, 12 were unable to tolerate the drug, and 24 were either lost to the series or observed for too short a time to be included in therapeutic results.

It was necessary to discontinue therapy in 12 patients because of severe toxic reactions, such as headache, nausea and vomiting, fever, pitting edema of the ankles,

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The hydralazine (Apresoline) was supplied by Ciba Pharmaceutical Products, Inc. and the hexamethonium (Bistrium) by E. R. Squibb and Sons.

Some of the patients treated were from the practices of Drs. Priest, Smith, Sittler, Raines, Ladd, Kilgore, Sippy, Isaacs, Abrahams, Wilson, Mallach, and Lestina of Chicago.

1. (*a*) Schroeder, H. A.: Effects of 1-Hydrazinophthalazine in Hypertension, Circulation **5**: 28 (Jan.) 1952. (*b*) Freis, E. D.; Finnerty, F. A.; Schnaper, H. W., and Johnson, R. L.: The Treatment of Hypertension with Hexamethonium, ibid. **5**: 20 (Jan.) 1952. (*c*) Schroeder, H. A.: Control of Hypertension by Hexamethonium and 1-Hydrazinophthalazine; Preliminary Observations, A. M. A. Arch. Int. Med. **89**: 523 (April) 1952. Taylor, R. D.; Dustan, H. P.; Corcoran, A. C., and Page, I. H.: Evaluation of 1-Hydrazinophthalazine ("Apresoline") in Treatment of Hypertensive Disease, ibid. **90**: 734 (Dec.) 1952. Grimson, K. S.; Orgain, E. S.; Rowe, C. R., Jr., and Sieber, H. A.: Caution with Regard to Use of Hexamethonium and "Apresoline," J. A. M. A. **149**: 215 (May 17) 1952. Riven, S. S., and others: The Control of Hypertension with 1-Hydrazinophthalazine (Apresoline), Am. J. Med. **14**: 160 (Feb.) 1953.

2. (*a*) Carver, B. W., and Yonkman, F. F.: Some Pharmacological Properties of 1-Hydrazinophthalazine, a Hypotensive Agent, Fed. Proc. **9**: 265 (March) 1950. (*b*) Gross, F.; Druey, J., and Meier, R.: A New Group of Depressor Substances with a Special Type of Effect, Experientia **6**: 19, 1950.

3. Taylor, R. D.; Page, I. H., and Corcoran, A. C.: A Hormonal Neurogenic Vasopressor Mechanism, A. M. A. Arch. Int. Med. **88**: 1 (July) 1951.

4. Wilkinson, E. L.; Backman, H., and Hecht, H. H.: Cardiovascular and Renal Adjustments to a Hypotensive Agent (1-Hydrazinophthalazine: Ciba BA-5968: Apresoline), J. Clin. Invest. **31**: 872 (Oct.) 1952.

and, in one case, an anginal attack. There was no effective treatment for any of these severe reactions. In the other patients experiencing reactions, the majority of symptoms disappeared spontaneously in about two weeks. Antihistaminic drugs, and in severe cases phenobarbital in addition, relieved headaches, nasal congestion, watery eyes, and periorbital edema.

The pitting edema of the ankles was generally accompanied by macular erythema covering the ankles only. It did not respond to a low salt diet, diuretics, or antihistaminic drugs. Side-effects were minimized when therapy was started with small doses and the doses were increased very gradually. Perhaps the incidence of side-effects in this series is higher than will be reported in the future because the importance of dosage was not appreciated early in the study. No evidence of chronic toxicity was observed.

Administration of Hydralazine.—This study was confined to oral administration. Initially, doses were given five times daily; later, doses were given four times daily. The latter proved equally effective and more convenient. Whether the drug was taken before or after meals made little difference. A satisfactory method of administration must do two things, minimize side-effects and lower pressure only gradually. The following system met these requirements. The first day a 25 mg. tablet was given with breakfast and the evening meal. Thereafter the total dose was increased 25 mg. a day. A schedule of doses was prepared for each patient (table 1).

TABLE 1.—*Dosage Schedule for Milligrams of Hydralazine*

	7:30 A. M.	Noon	5:30 P. M.	10:00 P. M.
Sunday	25*	..	25	..
Monday	25	..	25	25
Tuesday	25	25	25	25
Wednesday	25	25	25	50†
Thursday	25	50	25	50
Friday	50	50	25	50
Saturday	50	50	50	50

* 25 mg. tablets are blue.
† 50 mg. tablets are red.

In a period of seven days the total daily dose was increased from 50 to 200 mg. If severe side-effects occurred, the dose was held stationary for a time and then increased more gradually. The dose was also held stationary whenever a satisfactory pressure drop was obtained. Therapy may also be started with 10 mg. doses and increased in a similar manner.

The range of daily doses that were effective in producing a significant fall in pressure (21 mm. Hg or more in systolic or diastolic pressure) were 100 mg. effective in three patients; 125 mg., two; 150 mg., one; 200 mg., four; 250 mg., eight; 300 and 375 mg., four patients each; 500 mg., seven; and 625 and 750 mg., one patient each. There was marked individual variation making careful gradation of the dose more imperative. The maximum dose given was 900 mg.; this was completely ineffective in three patients. It was felt that doses in excess of 900 mg. daily were not indicated. No subnormal pressures were observed regardless of the dose.

No case of true tolerance to hydralazine was noted. Often it was necessary to increase the dose from time to time, but no patient with an initial favorable response became refractory to treatment. Several patients voluntarily stopped therapy. When therapy was again started, they responded to smaller doses. In some cases, it was possible to reduce the dose and to maintain the same therapeutic results.

TABLE 2.—*Range of Fall in Pressure in Fifty Patients Given Hydralazine*

Fall in Pressure,* Mm. Hg		Number of Patients: Systolic		Number of Patients: Diastolic	
0-10		7		12	
11-20		10		16	
21-30		8		15	
31-40		12		7	
41-50		7		0	
51-60	Significant response	4	66%	0	44%
61-70		1		0	
71-80		0		0	
81-90		1		0	

* Pressures all recorded in recumbent position; no postural drop noted during hydralazine therapy.

Results of Therapy with Hydralazine.—Fifty patients were treated for periods varying from 1 to 17 months; the average was 8 months. The results obtained in lowering blood pressure are summarized in table 2.

A sustained fall in either systolic or diastolic pressure of more than 20 mm. Hg is arbitrarily considered significant. The actual significance of any drop in pressure depends on the initial level and the symptomatic response. It is felt, however, that this standard represents a true therapeutic response.

The systolic and diastolic responses in individual patients are correlated in table 3. These results indicate that long-term therapy with hydralazine hydrochloride is moderately effective in reducing both systolic and diastolic pressure, but causes a greater reduction in systolic pressure.

Theoretically lowering of blood pressure may cause azotemia, cerebral vascular accidents, myocardial infarction, and, in patients with papilledema, respiratory failure or cardiac arrest. None of these complications occurred in patients who responded to therapy. One myocardial infarction occurred in a patient who was taking the drug. This elderly man, with moderately severe hypertension, had no drop in pressure on a total daily dose of 600 mg. The infarction was not thought to be due to hydralazine. It was noted that elderly and severely arteriosclerotic patients often became dizzy and felt extremely tired when their pressure was lowered. All patients who had a marked drop in pressure were initially weak and listless. This lasted for periods as long as several weeks. Patients with symptomatic hyperten-

TABLE 3.—*Systolic and Diastolic Response in Patients Taking Hydralazine*

	No. of Patients	%
Response in diastolic pressure only	2	4
Response in systolic pressure only	13	26
Response in both systolic and diastolic pressure	20	40
Significant response not obtained in either systolic or diastolic pressure	15	30

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sion felt better after their pressure was lowered. They were less nervous; headaches disappeared; palpitation was relieved; and pulmonary congestion, to the point of acute pulmonary edema in some cases, was relieved. Blood pressures were maintained at a relatively constant level without postural hypotension and without wide swings of alternating hypertension and hypotension.

It is concluded that hydralazine hydrochloride is a safe drug that may be given to outpatients. It is moderately effective in lowering pressure; it is more effective in mild to moderate hypertension than in long-standing severe hypertension. The incidence of side-effects is high. These, however, are not serious and are generally transient. Hypertensive symptoms are relived when blood pressure is lowered.

THERAPY WITH HEXAMETHONIUM

Pharmacology.—Hexamethonium is a ganglionic blocking agent; it blocks both the sympathetic and the parasympathetic ganglions.[5]

Side-Effects.—The side-effects observed in 30 patients taking hexamethonium orally included postural hypotension in 23 (77%), constipation in 15 (50%), dry mouth in 9 (30%), blurred vision in 8 (27%), difficult urination in 6 (20%), diarrhea in 6 (20%), decrease in potency in 6 (20%), decrease in perspiration in 6 (20%), and anginal attack in 1 (3%). The period of observation varied from 1 to 15 months; the average was 7 months per patient. Side-effects are mainly the result of the action of the drug on ganglions. Parasympathetic block causes constipation, dry mouth, blurred vision, difficult urination, and decrease in potency. Sympathetic block results in postural hypotension. Diarrhea is the result of local irritation of the gastrointestinal tract.

Postural hypotension occurred in 75% of the patients. It varied from slight dizziness on standing to prostrating hypotension. It was unpredictable in onset and variable in occurrence. Some patients had isolated episodes after periods of uneventful therapy up to three months. Many patients had it daily, but with marked variation in severity. In one patient, severe postural hypotension persisted for seven days after discontinuing therapy, and during that time bowel movements were regular. To illustrate the great variability in response, the following example is given. One patient received a daily dose of 2,000 mg. of hexamethonium chloride. Pressures recorded in millimeters of mercury were:

Date	Recumbent Pressure	Standing Pressure
1-31-53	210/120	190/120
2- 7-53	180/100	140/ 90
2-14-53	174/ 90	160/ 90
2-21-53	260/150	120/ 80

Postural hypotension is a difficult, unpredictable, dangerous complication of therapy. Under certain circumstances it could be severely damaging to vital tissues, or even fatal.

Constipation occurred in 50% of the patients. Generally it was controlled with nightly doses of milk of magnesia. Severer cases required cascara and enemas. Bethanechol (Urecholine) chloride has been reported to aid in preventing severe constipation, but it did not prove effective in this series of patients.[1b] Cases of paralytic ileus have been reported in patients taking hexamethonium orally.[1b] It was not observed in this series. Patients must pay strict attention to the onset of constipation, and, in no case, should they allow more than 48 hours to pass without a bowel movement. To do so could cause paralytic ileus or severe hypotension.

Blurred vision is due to cycloplegia. This occurred to some extent in 26% of patients. It was generally of short duration, but in one patient it was almost constant and was extremely annoying. Temporary interference with micturition occurred in 20% of patients. It was necessary to catheterize some of these. As therapy was continued, this symptom disappeared in all but one patient, an elderly man with prostatic hypertrophy. Bethanechol chloride, sublingually, was of some benefit in the relief of urinary retention.[1b]

Diarrhea was intermittent and explosive. In some cases, there was an associated proctitis. Efforts to stop the diarrhea with opium derivatives, bismuth, and kaolin compounds were unsuccessful. It promptly disappeared when the therapy was stopped. No effort was made to treat the dry mouth, decrease in sweating, or the decrease in potency. It is reported that bethanechol chloride relieves dryness of the mouth.[1b] No evidence of chronic toxicity was observed.

Administration of Hexamethonium.—Hexamethonium may be administered either orally or parenterally. The method advocated by Freis for initiation of therapy with hexamethonium administered parenterally proved satisfactory in our series.[1b] Two precautions must be stressed; first, the patient must be in the hospital, and, second, a pressor amine, such as phenylephrine (Neo-Synephrine) hydrochloride, must be available for immediate intravenous use, since a precipitous, potentially fatal, fall in pressure may occur after the initial dose. In one patient, the pressure dropped from 260/160 to 90/50 mm. Hg within seven minutes during the intravenous administration of only 3 mg. of hexamethonium.

After the initial dose was determined, this amount was injected subcutaneously every eight hours. Increases were made as necessary. Experience in this series with parenteral administration was limited to four patients. The response was found to be much more predictable than after oral administration.

Oral administration of the drug is feasible in most patients and was used exclusively in obtaining the therapeutic results reported. Since the effective oral dose is up to 20 times the parenteral dose, it is important that confusion in method of administration does not occur. This happened in one patient. A 125 mg. dose, which was intended for oral administration, was given intramuscularly. Pressure rapidly fell to shock levels. Oral therapy was started with either a 62.5 or a 125 mg. dose twice daily. This was gradually increased to four times daily. Further increases were made as indicated by the pressure response. The range of total daily doses in this series was from 1,125 to 3,000 mg. It was felt that doses in excess

5. Paton, W. D. M., and Zaimis, E. G.: Clinical Potentialities of Certain Bisquaternary Salts Causing Neuromuscular and Ganglionic Block, Nature, London **162**: 810 (Nov. 20) 1948.

of 3,000 mg. were not indicated. During therapy, frequent checks on pressure were made.

Some degree of tolerance to hexamethonium developed. This was more marked after parenteral than oral therapy. It varied from a mild degree to a state of complete refractoriness to therapy. Tolerance was overcome by discontinuing therapy for periods varying from two to seven days.

TABLE 4.—*Range of Fall in Pressure in Fifteen Patients Using Hexamethonium*

Fall in Pressure, Mm. Hg	Number of Patients: Recumbent Systolic	Recumbent Diastolic		Standing Systolic	Standing Diastolic	
0-10	2	8		0	2	
11-20	4	5		1	6	
21-30	5	2		2	5	
31-40	2	0		1	1	
41-50	1	0		3	1	
51-60	1	0		3	0	
61-70	Significant response 0	0	13%	3	0	47%
71-80	0	0		0	0	
81-90	0	0		0	0	
91-100	0	0		1	0	
101-110	0	0		1	0	

Whether or not it is safe to start oral administration of hexamethonium in office patients is difficult to say. Actually, it is not safe and involves a calculated risk. The intelligence of the patient and the severity of the hypertension must be considered. An alternative regimen was used that insured some degree of safety. The initial dose was taken in the office and pressure readings taken hourly until the peak of action passed.

Results of Therapy with Hexamethonium.—Fifteen patients were treated for periods of time varying from 1 to 13 months; the average was 7 months per patient. The results obtained in lowering blood pressure are summarized in table 4.

In evaluating the response to therapy with hexamethonium, it was necessary to consider the pressure in both the recumbent and standing positions. Since postural hypotension of some degree occurred and was marked in many cases, it was often necessary to be satisfied with a moderate or very slight decrease in the recumbent pressure in order that the standing pressure would be within the physiological limits tolerated by the patient. The marked effect of the postural hypotension is clearly illustrated (table 4). That hexamethonium is a potent agent for lowering blood pressure is also shown.

There were four patients with malignant hypertension in the azotemic phase. All initially responded to therapy. One patient almost immediately became refractory and died. One patient was lost to the series; two obtained a short remission of several months but died. In all, the azotemia initially became worse, but then values fell to normal where they remained until death. Values for phenolsulfonphthalein excretion and urea clearance did not improve.

In addition to the theoretical complications of lowered pressure already described, hexamethonium therapy should be used cautiously in patients with glaucoma, renal insufficiency, and prostatic hypertrophy. One case of cerebral thrombosis occurred after three months of successful therapy. No case of azotemia occurred, and no evidence of the building up of toxic blood levels of hexamethonium occurred in patients with renal insufficiency. One severe anginal attack occurred when pressure was inadvertently allowed to fall to 90 mm. Hg systolic. Urinary retention was observed in one patient. No patients with glaucoma were treated. No myocardial infarctions occurred.

When patients with symptomatic hypertension had pressures lowered they felt better; headaches disappeared. In several patients, headaches were relieved even when pressures were high. Palpitation was improved. Pulmonary congestion and, in several cases, recurring attacks of acute pulmonary edema disappeared. Blurred vision, resulting from hypertensive retinopathy, was markedly improved. Blood pressure levels showed wide swings between hypertension and hypotension. It was not possible to maintain a relatively constant level.

It is concluded that hexamethonium is a potent drug for lowering blood pressure. Its use results in wide variations in pressure. When this fact, together with the dangerous side-effects and the tendency for tolerance to develop are considered, it is obvious that this is not an ideal drug for the routine treatment of hypertension. Its use should be restricted to selected cases of severe hypertension uncontrolled by other means. Hypertensive symptoms are relieved in patients whose pressures are lowered.

COMBINED THERAPY

The combination of hydralazine hydrochloride and hexamethonium was used only in patients with severe hypertension. The results reported may, therefore, be somewhat different from those reported by investigators using it in all cases of hypertension.

It was preferable to begin therapy with hexamethonium alone until a therapeutic response was obtained and then to add hydralazine hydrochloride to the regimen. At this point either of two methods of administration was effective. One was to give hexamethonium at 7:00 a. m., 1:00 p. m., and 7:00 p. m. and hydralazine

TABLE 5.—*Range of Fall in Pressure in Fourteen Patients Using Both Hydralazine and Hexamethonium*

Fall in Pressure, Mm. Hg	Number of Patients: Recumbent Systolic	Recumbent Diastolic		Standing Systolic	Standing Diastolic	
0-10	3	4		1	2	
11-20	3	4		0	3	
21-30	4	3		1	6	
31-40	2	3		2	1	
41-50	Significant response 1	0	43%	6	2	64%
51-60	0	0		1	0	
61-70	1	0		1	0	
71-80	0	0		2	0	

hydrochloride at 10:00 a. m., 4:00 p. m., and 10:00 p. m. A more convenient method was to give the drugs simultaneously four times daily. Doses of hydralazine varied from 75 to 400 mg. and those of hexamethonium from 250 to 3,000 mg. daily.

Fourteen patients were treated for periods varying from 1 to 11 months; the average was 6 months per patient. The results obtained in lowering blood pressure are summarized in table 5. The clinical response in pa-

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tients responding to therapy was similar to that already described when each drug was used alone.

When the results in table 5 are compared with therapeutic results using each drug alone, several facts are apparent (table 6). In the recumbent position, the percentage of patients obtaining a significant fall in systolic pressure is approximately equal in all three methods of therapy. The recumbent diastolic response is poor when hexamethonium is used alone. It is approximately equal when hydralazine hydrochloride is used alone or in combination. In the standing position, an equal number have a significant fall in systolic pressure using hexamethonium alone or in combination; hydralazine alone is less effective. The standing diastolic response is approximately the same using either drug alone, but slightly better when using a combination.

It was hoped that hydralazine would prevent or modify the wide variations in pressure during hexamethonium therapy. This was not the case. The same difficulties occurred as when either drug was used alone. A slightly greater percentage of patients had a significant response in standing diastolic pressure during combination therapy, but the main pressure drop was brought about by

TABLE 6.—*Comparison of the Three Methods of Therapy in Producing a Significant Fall in Blood Pressure*

	Recumbent		Standing	
	Systolic	Diastolic	Systolic	Diastolic
Hydralazine.....	60%	41%	60%	44%
Hexamethonium.....	60%	13%	93%	47%
Combination.....	57%	43%	93%	64%

hexamethonium. It is felt, therefore, that combination therapy offers little advantage over therapy with hexamethonium alone.

COMMENT

No means was found to predict which patients would respond to therapy. Four patients who previously had sympathectomies were treated. Their response was no different from that of other patients.[4] All patients with a presumed renal hypertension responded well.

Therapeutic results obtained treating hypertension must be critically analyzed. The course of hypertensive vascular disease is in itself subject to wide variations. The emotional and stress situation varies. It is difficult to discount the placebo effect of any new medicament. Pressures taken at home and in the office may very considerably. Because of these variables, the actual advantage of therapy with these drugs in asymptomatic patients cannot be demonstrated until long-term studies of both treated and control groups are carried out.

Successful therapy with these drugs involves understanding on the part of both the patient and the physician. The patient must understand that their administration is highly individualized, requires close supervision, involves certain side-effects, and is necessarily a long-term plan of therapy. The physician must be thoroughly familiar with the pharmacology, method of administration, and side-effects of these drugs. He must not expect immediate results but be willing to increase doses gradually as indicated by therapeutic response.

SUMMARY

Hydralazine hydrochloride is a safe, moderately effective, antihypertensive drug. It can be given to office patients. The incidence of toxic effects is high, but these are generally transient. Of patients able to tolerate the drug, 66% obtained a significant fall in systolic pressure and 44% a significant fall in diastolic pressure. Thirty per cent did not respond to therapy. Patients in whom the pressure was significantly lowered were relieved of hypertensive symptoms.

Hexamethonium is a powerful, dangerous, antihypertensive drug. Its oral use results in unpredictable, wide variations in blood pressure. Starting oral therapy on office patients is not completely safe. Its main effect is brought about through postural hypotension. While standing, 93% of patients had a significant fall in systolic pressure and 47% in diastolic pressure. Patients in whom the pressure was significantly lowered were relieved of hypertensive symptoms. The use of hexamethonium should be restricted to patients with severe hypertension that does not respond to other measures.

Combined use of these drugs results in only slight advantage. The major therapeutic result in combined therapy is from hexamethonium. Elderly and severely arteriosclerotic patients do not tolerate a lowered blood pressure well. These drugs should be used with caution in such patients.

These drugs are not a completely satisfactory treatment for hypertension. They are, however, the best now available. Perhaps their greatest value will be the stimulation of investigation in similar and in new drugs.

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Development of the Child.—There is nothing as helpless as the newborn baby. . . . If a child is kept babyish, he will remain emotionally immature and unable to face the demands of life. He is likely to be timid and fearful but also demonstrative and appealing, always seeking someone on whom to depend. As the child grows older, the wise parent will reserve interference for major matters and leave the child to rely on himself in coping with minor problems, even if the solution is not all that could be desired. Sometimes the parent mistakes precocity for self-reliance. The child may want to interfere in everything that elders are doing but be unable to carry out the most elementary task on his own. It is a universal weakness to want to skip grades and one that appears very early. The mentality of the office boy who wants to tell the management and officials how to do their jobs, but resents the duties of an office boy, appears already in the nursery. . . . He must be content to start at the beginning and to learn step by step. He should not be permitted to acquire the interests of his elders at the expense of the normal activities of a small child. Next comes the need for companionship. Human beings are social creatures and need to live together. All social creatures have to learn to limit themselves in various ways for the sake of their neighbours. . . . It is well to remember, however, especially in these days of small families, that adults cannot serve as companions to children, for there can be no equality in the relationship. Satisfactory social adjustment can be achieved only through the give and take association of peers.—H. M. North, M.D., Development of the Child, *Medical Journal of Australia*, May 2, 1953.

VALUE OF EXERCISE IN PERIPHERAL ARTERIAL DISEASE

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Many therapeutic agents are used in the treatment of occlusive peripheral arterial disease. Most of them are utilized to obtain an increased blood flow in the tissues of the extremities. An agent commonly used is therapeutic exercise. Exercise is done either in the form described by Buerger or that described by Buerger and modified by Allen.[1] Allen, Barker, and Hines state: "It is surprising that this method of treatment has been used so widely and yet there has been so little curiosity manifested as to whether or not it is effective in increasing the flow of blood through the extremity. The theory apparently has been that if the blood vessels were alternately emptied and distended, they would eventually accept an increased function in the transportation of blood. So far as we know there is not the slightest physiologic evidence that this occurs."[1]

It was the purpose of our studies to determine whether these exercises actually do produce an increased blood flow in the extremities of persons with and without peripheral arterial disease. It was also desired to determine quantitatively the changes in blood flow produced by a series of exercises requiring progressively greater muscular effort. The method used was that of measuring the clearance of radiosodium (Na^{24}) from tissues. The rate of this clearance reflects the effective circulation in these tissues.[2] In this way the effects of exercise were determined both during and after exercise.

Because, in a normal person, blood flow is greatly increased in muscles exercised against resistance,[2b] the effectiveness of this form of therapy in peripheral arterial disease was also studied and compared with the more commonly used forms.

METHOD

The 10 normal subjects tested in this study were volunteers. They had no symptoms of peripheral vascular disease and had palpable pedal pulses with normal oscillometric indexes. The 19 subjects who had arterial disease of the lower extremities were selected from an active peripheral vascular disease clinic on the basis of the fact that all had intermittent claudication of varying degree but no evidence of gangrene.

Muscle blood flow was determined by use of the radiosodium clearance technique, and the results were analyzed according to the method described by one of us.[2c] The clearance half life is the time taken for the activity initially present to be reduced to one half. The clearance constant (K) equals the natural logarithm of 2 divided by the clearance of half life ($T\frac{1}{2}$): $K = 0.693 / T\frac{1}{2}$. Injections of 0.1 cc. of isotonic sodium chloride containing 1 to 3 μc of Na^{24} were made into the belly of the gastrocnemius muscle. A 22 gage, 1 in. (2.54 cm.) needle was used; the needle was inserted to the hilt in order to approximate the same depth of injection in the same person in all studies. A light weight Geiger counter was strapped to the leg at the site of the injected material, and the radioactivity present was recorded on an automatic register at one minute intervals. This method permitted exercise of the extremity and, at the same time, maintenance of the relationship of the counter to the site of the injected material throughout the experiment.

In all cases, the clearance rate was determined at rest. This was done after the subject had remained in the supine position in a relaxed fashion for 20 minutes. These clearance rates were determined in order to compare them with those obtained during exercise and five minutes after cessation of exercise.

Three specific forms of exercise were given in all cases. In exercise 1, while the patient was supine, the leg with the counter strapped to it was elevated by an assistant to a 60 degree angle where it was supported for two minutes. Then the assistant placed the leg in a dependent position for three minutes and then in a horizontal position for five minutes. This cycle was performed six times. At no time was the patient required to contract any leg muscles in performing these maneuvers. In exercise 2, the same procedures were followed except the patient performed active plantar and dorsal flexions of his foot 30 times a minute while the leg was in the elevated and in the dependent positions. In exercise 3, while the patient was supine, a therapist exerted considerable manual resistance to active plantar flexion. Dorsiflexion was unopposed. This resistance was offered in such a manner as to permit full plantar flexion 30 times a minute for 20 minutes. Most of the subjects complained of muscle fatigue at varying intervals. When this occurred, they were permitted to rest for one minute before exercise was resumed.

RESULTS

Controls During Exercise.—The four normal subjects in whom the clearance rate was determined during exercise showed an increase compared to the resting clearance rate. The greatest increase occurred with exercise 3. The average increase, compared to the resting rate, was 33% during exercise 1 (only two of the four studies were significant) 63% during exercise 2, and 114% during exercise 3 (table 1 and figure).

Patients with Arterial Disease During Exercise.—In eight patients with peripheral arterial disease in whom the clearance rate was found during exercise, the average increase, compared to the resting clearance rate, was 17% for exercise 1, 34% for exercise 2, and 84% for

From the Radioisotope Unit, Physical Medicine Rehabilitation Service, and the Peripheral Vascular Disease Clinic, Veterans Administration Hospital.

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2. (*a*) Kety, S. S.: Measurement of Regional Circulation by the Local Clearance of Radioactive Sodium, Am. Heart J. **38**: 321, 1949. (*b*) Franke, F.; Boatman, J.; George, R., and Moses, C.: Effect of Physical Factors on Radiosodium Clearance from Subcutaneous and Intramuscular Sites in Animals, Proc. Soc. Exper. Biol. & Med. **74**: 417, 1950. (*c*) Wisham, L. H., and Yalow, R. S.: Some Factors Affecting the Clearance of Na^{24} from Human Muscle, Am. Heart J. **43**: 67, 1952.

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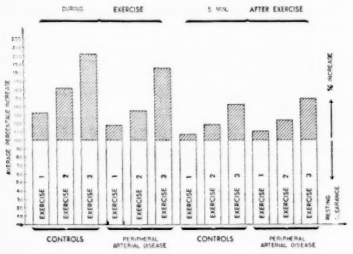
exercise 3. In two of these patients, the clearance constant during exercise 1 was 4% less than that during rest (table 2 and figure).

Controls After Exercise.—In six normal subjects in whom the clearance rate was determined five minutes after the cessation of exercise, there was an increase in the rate with all types of exercise except in one subject who showed no increase after exercise 1. The average increase, as compared to resting levels, was 7% for exercise 1, 17% for exercise 2, and 41% for exercise 3 (table 3 and figure).



Average percentage increase of clearance constant (K) in control patients and in patients with peripheral arterial disease during and after exercise.

TABLE 1.—*Radiosodium Clearance Constants of Control Subjects During Exercise*

Rest	Exercise 1		Exercise 2		Exercise 3	
Clearance Constant (K), Min.$^{-1}$ *	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %
.103	.173	68	.231	124	.231	124
.076	.0840	10	.087	15	.139	65
.099	.154	54	.183	63	.252	152
.089	.092	2	.139	51	.213	114
Average, %.....		33		68		114

* Per minute.

TABLE 2.—*Radiosodium Clearance Constants of Patients with Arterial Disease During Exercise*

Rest	Exercise 1		Exercise 2		Exercise 3	
Clearance Constant (K), Min.$^{-1}$ *	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %
.076	.079	3	.099	31	.173	128
.099	.096	−4	.146	46	.185	85
.096	.099	3	.111	16	.185	92
.068	.063	−4	.087	28	.103	51
.079	.111	40	.096	21	.154	95
.076	.132	74	.139	83	.154	103
.116	.126	9	.146	26	.198	71
.120	.139	16	.146	22	.173	44
Average, %.....		17		34		84

* Per minute.

Patients with Arterial Disease After Exercise.—In 11 patients with peripheral arterial disease in whom the clearance rate was determined five minutes after the cessation of exercise, all showed an increase after exercise 3. There were four who showed either no increase or a slower clearance rate after exercise 1 and three who showed either no increase or a slower clearance rate after exercise 2. The average increase, as compared to the resting rate, was 8.7% for exercise 1, 23% for exercise 2, and 47% for exercise 3 (table 4 and figure).

COMMENT

Rates of radiosodium clearance are reproducible with a plus or minus 15% error in the same person over varying time periods. An increase in the clearance constant of less than 15% should not be considered significant for a single study. In a series of determinations in various subjects, however, a consistent increase of even less than 15% must be considered statistically significant. If changes in the clearance constant of less than 15% are eliminated, two of four controls and five of eight patients with peripheral arterial disease showed no increase during exercise 1. During exercises 2 and 3, all those persons tested showed increases.

TABLE 3.—*Radiosodium Clearance Constants of Control Patients Five Minutes After Cessation of Exercise*

Rest	Exercise 1		Exercise 2		Exercise 3	
Clearance Constant (K), Min.$^{-1}$ *	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %
.087	.089	2	.089	2	.126	45
.087	.089	2	.111	22	.116	33
.132	.132	0	.146	10	.163	23
.096	.099	3	.126	31	.154	60
.089	.099	11	.107	20	.120	35
.092	.116	26	.111	20	.139	50
Average, %.....		7		17		41

* Per minute.

TABLE 4.—*Radiosodium Clearance Constants of Patients with Arterial Disease Five Minutes After Cessation of Exercise*

Rest	Exercise 1		Exercise 2		Exercise 3	
Clearance Constant (K), Min.$^{-1}$ *	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %	Clearance Constant (K), Min.$^{-1}$	Increase, %
.076	.081	6.5	.120	58	.111	45
.069	.069	0	.055	−20	.087	26
.053	.043	−19	.055	4	.146	75
.068	.071	3	.077	13	.077	13
.069	.079	14	.087	26	.116	68
.082	.116	41	.126	53	.146	78
.084	.076	−9	.084	0	.092	9
.038	.043	13	.063	66	.055	45
.049	.051	4	.051	5	.076	47
.060	.060	0	.059	0	.087	45
.073	.103	41	.107	47	.126	73
Average, %.....		8.7		23		47

* Per minute.

Following cessation of exercise, the clearance rate will diminish as the metabolic effects of exercise subside. It is, therefore, possible that a well-trained person would show no increase in clearance rate five minutes after cessation of exercise because enough blood was brought to the part during and shortly after exercise to remove the accumulated metabolites quickly. This may explain the reason for which the average increase in controls after exercise was somewhat less than that for patients with vascular disease.

If increases in clearance of less than 15% are eliminated, 5 of 6 controls and 9 of 11 patients with vascular disease had no response five minutes after exercise 1; 2 of

6 controls and 6 of 11 patients with vascular disease had no response five minutes after exercise 2; and none of 6 controls and two of 11 patients with arterial vascular disease had no response five minutes after exercise 3.

These findings indicate that the mechanical concept of the passive emptying and distention of the vascular bed in an alternate fashion as a stimulus to increased blood flow must be discarded. No evidence is being presented for any long-term effectiveness of exercise as therapy. It is evident, however, that muscular contraction is an effective stimulus for increasing blood flow during and for a short time after exercise. In a general way, the blood flow increases as the muscular effort increases. Even in passive motion, as in exercise 1, it can be demonstrated electromyographically that, except in very relaxed persons, the subject makes an unconscious attempt to aid the motion of his limb.[3] This minor muscular contraction may produce in some cases minor increases in blood flow. The increasing muscular effort through exercises 2 and 3 produces an increasing blood flow, if not proportionately, at least in the same direction. The probable mechanism is through the mediation of vasodilator metabolites produced by the exercise.

SUMMARY AND CONCLUSIONS

1. Passive postural exercises do not increase blood flow significantly.

2. Active exercise is effective in increasing blood flow during and shortly after its administration.

3. The effect of exercise increases with increase in muscular effort.

4. The most effective form of exercise is that in which the muscles of the involved extremities are offered considerable resistance against their contraction.

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3. Unpublished data.

ETHAVERINE IN THE TREATMENT OF ANGINA PECTORIS

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In laboratory animals papaverine acts as a potent coronary vasodilator drug.[1] Studies [2] indicate that ethaverine (6,7-diethoxy-1-[3,4-diethoxybenzyl] isoquinoline), the ethyl analogue of papaverine, is a general visceral and vascular spasmolytic agent. In recent experiments concerning the coronary blood flow of quickly isolated, beating rabbit hearts, ethaverine has been shown to be equal to papaverine in peak potency but of more durable action, so that in total effect summed up over time it is more effective.[3] Ethaverine has the advantage of not being classified as a narcotic under the Harrison Act.[4] The toxicity of ethaverine is roughly one-third that of papaverine, and large doses have been given in man without untoward effect. In a previous study,[5] 16 patients with relatively stable angina pectoris were given ethaverine over periods of 4 to 20 weeks, followed by placebo therapy for corresponding periods. Seven of these 16 patients experienced marked reduction in frequency and severity of angina while taking ethaverine, and 4 patients experienced similar improvement while on placebo therapy.

MATERIAL AND METHODS

In order to avoid the common errors of physician enthusiasm and "new drug" psychological effect on the patient and because angina pectoris exhibits spontaneous variations, it was decided to perform a "double-blind" experiment for more accurate evaluation of ethaverine in this disorder. For the same reasons Greiner and coworkers [6] employed a similar technique in their evaluation of visammin (khellin) in angina pectoris. Twenty-two patients were selected from our clinic for alternate periods of treatment with ethaverine and placebo. Ages ranged from 40 to 77 years, the average age being 57 years. All had proved coronary artery disease with moderately severe to incapacitating angina pectoris. Most patients had demonstrated stable anginal patterns for several months before starting the experiment. Seventeen of the 22 patients had electrocardiographic changes consistent with coronary heart disease, and 17 had had proved or suspected myocardial infarction in the past. Each was instructed to continue those medicines, except papaverine or xanthine drugs, in use before the experiment was initiated, and care was taken that no other change in regimen was made.

Daily report cards were employed, on which patients recorded the number of attacks of angina, the number

Mrs. Doris Bray supplied technical assistance.

The drugs used in this study were supplied by Parke, Davis & Company, Detroit.

From the Department of Medicine, Duke University School of Medicine, and the Cardiovascular Service, Duke Hospital. Drs. Voyles and Sieber were aided by a traineeship from the National Heart Institute, United States Public Health Service.

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of nitroglycerin (glyceryl trinitrate) tablets used, and whether the day was a "good," "bad," or "unchanged" one. An illustration of the daily report card used is given in the figure. This particular method of evaluating patient response to drug has been decidedly helpful; patients have been able to keep a more accurate account of angina than by other means, including a daily diary. In most instances reports were recorded in a satisfactory manner.

Two capsules, each containing 50 mg. of ethaverine, were given four times daily for a total dosage of 400 mg. Placebo capsules of identical appearance containing lactose were prescribed in the same number and in similar containers; one preparation was labeled D-47 and the other D-48. Patients were informed that the drugs in question were experimental, of unproved value, and that both drugs would be used alternately. A technician, who had no contact with the patient other than dispensing the drugs, started alternate patients on placebo or ethaverine, each patient receiving six weeks of therapy on each preparation. The physicians who evaluated the patients' response had no knowledge of which preparation patients were receiving until the entire series of patients had completed the predetermined course of treatment. Patients were seen and examined at intervals of three to six weeks. Electrocardiograms and chest roentgenograms were routinely repeated for serial changes.

RESULTS

The results of therapy with ethaverine alternating with placebo over periods of 12 weeks in 22 patients with angina are shown in the table. Two patients died suddenly as a result of myocardial infarction during the study, one at the completion of the study while on placebo, and one, not included in this series, after 30 days of therapy with placebo alone. The total number of days all patients received ethaverine was 926, and they

Name _____ Card No. _____

BRING THIS CARD WITH YOU ON YOUR NEXT VISIT

How much heart pain did you have each day of the week?

Day of Week	Date	Same Pain as Usual (before drug started)	Less Pain Than Usual• Good Day	More Pain Than Usual• Bad Day	Number of Attacks of Pain	Number of Nitroglycerin Tabs. used
Sun.						
Mon.						
Tues.						
Wed.						
Thurs.						
Fri.						
Sat.						

Before going to bed each day, write a mark (X) in the space that describes your heart pain for the entire day. Use backs of card for comments.

Report card used by patients with angina pectoris during treatment with ethaverine and placebo.

received placebo 914 days. There are two points of interest in these findings. First, the percentage of unchanged (19.2%), good (73%), and bad (7.8%) days on ethaverine are strikingly similar to the results with placebo, 18.3% unchanged, 74.4% good, and 7.3% bad. Second, the majority of days were described as good days by patients undergoing treatment with either placebo or ethaverine.

The table gives each patient's total number of attacks of pain and the number of nitroglycerin tablets employed while taking each preparation. Patients 2 and 9 took nitroglycerin to prevent pain as well as to relieve pain, but this method of prophylaxis, followed through the entire study, does not influence the results. Patients 2 and 21 are the only ones who showed a signficant difference in the number of attacks of pain: the former improved by ethaverine, and the latter by placebo. The sum totals, as noted at the bottom of the table, reveal an unusual similarity in the effectiveness of the two preparations.

Effect of Ethaverine and Placebo Attacks of Pain on Number of Nitroglycerin Tablets Used

Patient	No. of Attacks of Pain		No. of Nitroglycerin Tablets Used	
	Ethaverine	Placebo	Ethaverine	Placebo
1	76	69	83	71
2	0	15	100	175
3	4	0	10	0
4	4	11	13	26
5	15	8	10	5
6	20	24	9	36
7	24	15	24	15
8	6	10	7	11
9	30	30	54	58
10	53	47	41	47
11	6	2	6	2
12	0	0	0	0
13	5	5	5	8
14	4	8	4	8
15	277	270	256	239
16	153	145	42	72
17	6	5	6	13
18	19	10	19	10
19	3	0	5	3
20	52	52	35	42
21	126	63	193	48
22	43	51	45	52
Total	926	849	967	941

COMMENT

In this group of patients the ethyl analogue of papaverine has been found to be no more effective in reducing either the severity or frequency of angina pectoris than similar amounts of lactose given under "double-blind" conditions. It is interesting to note that, with few exceptions, patients were significantly improved during therapy, both with ethaverine and with placebo. Experiments of this type afford an excellent form of psychotherapy, in that a new and perhaps promising form of therapy is offered by physicians in whom patients have confidence. Considerable attention also is devoted to the patient by virtue of frequent follow-ups at relatively short intervals. It is well known that angina pectoris may be affected by many factors other than exertion alone. Outstanding examples are variations in mood, emotional upsets, degree of security, fatigue, desire and hope for improvement, food load, and exposure, particularly to cold. It has been our observation that most of the patients in this series have exhibited cyclic variations in frequency and severity of angina pectoris irrespective of the type of medication. Periods of marked improvement extending from a few days to several weeks have been observed to recur periodically. This phenomenon leads to false assumptions regarding the efficacy of any drug being given during such periods of improvement.

Undesirable side-effects thought to be related to ethaverine therapy were experienced by 3 of 20 patients while receiving 400 mg. of the drug daily during a previous study,[5] but by no patients during the course of this study. Two patients experienced mild cramping pain in the low abdomen and loose stools over a period of several days; relief followed reduction in dosage or substitution of placebo. These symptoms were not of sufficient severity to cause the drug to be permanently discontinued. One patient experienced a marked increase in frequency and severity of angina during each of two 48 hour periods of ethaverine therapy, with prompt relief following cessation of therapy in each instance.

SUMMARY AND CONCLUSIONS

In experimental animals it has been shown that ethaverine, the ethyl analogue of papaverine, has a more prolonged and effective vasodilating action on the coronary arteries than papaverine. A "double-blind" study alternating ethaverine with placebo was made in 22 patients with stable angina pectoris. The majority of patients reported subjective improvement to an equal degree with both ethaverine and placebo. Ethaverine was no more effective than placebo therapy in reducing the severity or frequency of attacks of angina pectoris. Cyclic variations in frequency and severity of angina pectoris irrespective of medication were noted in this series.

ANEMIA IN BACTERIAL ENDOCARDITIS

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The frequent occurrence of anemia in bacterial endocarditis has not been sufficiently emphasized. Recognition of this association is particularly important in cases in which the use of antibiotic therapy for an undiagnosed febrile illness may have masked some of the usual symptoms and signs of the disease. Anemia and other hematological disturbances may occasionally even overshadow the more familiar manifestations of bacterial endocarditis to such a degree that the disease may be mistaken for a primary hematological disorder. Since antibiotic therapy cures most cases of subacute bacterial endocarditis, it is important that the diagnosis of anemia be made correctly and as early as possible.

The occurrence of anemia along with bacterial endocarditis is usually mentioned in descriptions of the disease. In 1927 Pepper [1] reported anemia in 19 of 20 cases of subacute bacterial endocarditis caused by nonhemolytic Streptococcus viridans. In 1939 Middleton and Burke [2] reported anemia, usually of mild degree, in 63.5% of 88 cases of bacterial endocarditis. Dowling and his associates [3] stated that a mild to moderate anemia was present in all of 25 cases of staphylococcic endocarditis. Detailed discussion of the pathogenesis of the anemia of bacterial endocarditis is beyond the scope of this paper; however, in addition to the interference with normal iron metabolism noted in anemia of infection by Cartwright and his associates,[4] factors such as toxic suppression of bone marrow function, hemolytic activity, or a hypersplenic influence may warrant consideration in some cases. Another hematological change is the occurrence in the blood of phagocytic reticuloendothelial cells (in 15 to 20% of patients with bacterial endocarditis), which, although not specific, is strong suggestive evidence of this disease. No other distinctive changes in the blood have been consistently noted.

This report is a review of a series of 200 cases of bacterial endocarditis seen at the Mayo Clinic in the years 1944 through 1949. Only cases in which clinical evidence of bacterial endocarditis was substantiated by positive blood cultures or by necropsy were included in the study. The incidence of various symptoms and signs was compared with that of anemia and other hematological findings. The duration of the disease was estimated as closely as possible to determine whether this factor bore any consistent relation to the severity of hematological changes.

RESULTS

Age and Sex.—The ratio of males to females was 2 to 1. A wide range of ages was found, with only 44% of patients between the ages of 11 and 40 years, as compared to 68% found in this age group by Middleton and Burke.[2]

History of Cardiac Abnormality.—Eleven patients were known to have congenital heart disease or a murmur present since birth. Fifty-seven patients had a history of rheumatic fever, and an additional five patients had had chorea. A group of 49 patients had been informed of the presence of a heart murmur at some previous time. One patient had been told that his heart was enlarged, and another mentioned a previous diagnosis of fibrillation. The remaining 76 patients (38%) had no history of rheumatic fever or cardiac murmur prior to the current illness.

Bacteriological Findings.—Cultures of the blood were made in 197 cases. The remaining three cases proved at necropsy to be bacterial endocarditis. In 169 cases

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(84.5%), the disease was caused by streptococci. Twenty-three cases (11.5%) were caused by micrococci, two by Escherichia coli, two by Hemophilus influenzae, and one by an unidentified gram-negative bacillus. A preliminary survey of data revealed no significant differences in duration, symptoms, or hematological changes of streptococcic and micrococcic endocarditis; therefore, the cases are not considered separately according to the organisms involved. The average duration of illness for the entire series was 5.1 months.

Symptoms.—The presenting symptoms were as follows: fever, 143 cases; loss of weight (average 27 lb. [12.24 kg.]), 83 cases; chills, 66 cases; weakness, 66 cases; fatigue, 54 cases; sweats, 45 cases; anorexia, 36 cases; headache, 30 cases; malaise, 23 cases; dyspnea, 22 cases; edema of ankles, 13 cases; chest pain, 19 cases; palpitation, 5 cases; orthopnea, 5 cases; abdominal pain, 18 cases; nausea and vomiting, 9 cases; nausea alone, 6 cases; bloating, 7 cases; diarrhea, 6 cases; arthralgia, 17 cases; arthritis, 11 cases; muscular pains, 15 cases; backache, 7 cases; painful fingers, 10 cases; petechiae, 8 cases; stroke (hemiplegia, hemiparesis, hemiparesthesia), 12 cases; aphasia, 4 cases; stiff neck, 4 cases. These symptoms not only represent the principal complaints volunteered by the patients but include all significant symptoms elicited in the histories. The more frequently occurring manifestations were constitutional and nonspecific. In contrast to the series of Middleton and Burke [2] is the infrequency in our patients of symptoms related to the heart as well as to other specific organs or systems.

Physical Findings.—Temperature exceeding 100 F was recorded in 150 patients (75%). In the remaining 25%, no temperature reading of 100 F or higher was obtained. Roentgenologic examination revealed definite cardiac enlargement in 74 patients (37%), doubtful or slight enlargement in 8 (4%), and no evidence of cardiac enlargement in 118 (59%). Cardiac murmurs were heard in all patients at some time during the course of the illness. In some no murmur was audible until late in the disease, and in others a murmur was present transiently or was not believed to be suggestive of a valvular lesion.

Enlargement of the spleen, usually of minimal degree but occasionally marked, was present in 88 patients (44%). In 7 patients (3.5%) the tip of the spleen was questionably palpable, and in the remaining 105 patients (52.5%) the spleen was not palpable. Hepatomegaly, usually associated with other evidence of congestive failure, was found in 30 patients (15%). Clubbing of the fingers was present in only 34 patients (17%). Evidence of embolization (in which we arbitrarily include the presence of petechiae or Osler's nodes) was present at some time in 122 patients (61%). In a small number, the evidence was subjective; for example, a history of pain in the splenic area, pain of pleuritic nature, or painful fingertips.

Laboratory Studies.—The hemoglobin concentration was recorded in 199 patients. The values obtained on the first examination are seen in table 1. Values of less than 12 gm. per 100 cc. of blood in males or less than 11 gm. per 100 cc. in females are considered indicative of anemia. A total of 150 patients (75%) had initial hemoglobin concentrations below these lower limits of normal. Twenty-eight patients (14.1%) had concentrations of 9 gm. per 100 cc. or less. Only 14 patients (7%) had values between 13 and 15 gm. per 100 cc., whereas in a group of normal persons most of the values are in this range, particularly in a group in which males predominate, as they do in this series. The relation of hemoglobin concentrations to the duration of bacterial endocarditis, as nearly as could be estimated from the histories, is shown in table 2. No consistent relationship can be found.

Erythrocyte counts were recorded in 191 cases. The values obtained on admission are shown in table 3. Counts of less than 4 million erythrocytes per cubic millimeter are considered to signify anemia in either sex.

TABLE 1.—*Concentration of Hemoglobin (Photoelectric Method) in 199 Cases of Bacterial Endocarditis**

Hemoglobin, Gm. per 100 Cc. of Blood	Males	Females	Total
15.0 and over	2	..	2
13.1-15.0	13	1	14
12.1-13.0	11	9	20
11.1-12.0	..	13	13
Total nonanemic patients	26	23	49
11.1-12.0	29†	..	29
9.1-11.0	63	30‡	93
7.1- 9.0	9	13	22
7.0 or less	5	1	6
Total anemic patients	106	44	150

* No determination made in one case.
† In men concentrations of less than 12 gm. per 100 cc. indicate anemia.
‡ In women concentrations of less than 11 gm. per 100 cc. indicate anemia.

TABLE 2.—*Concentration of Hemoglobin and Duration of Disease in 200 Cases of Bacterial Endocarditis*

	Average Duration, Months		
Hemoglobin, Gm. per 100 Cc. of Blood	Males	Females	Entire Group
15.0 and over	0.5	...	0.5
13.1-15.0	4.0	(9.0)*	4.0
11.1-13.0	5.6	3.9	4.9
9.1-11.0	4.4	4.6	4.5
7.1- 9.0	6.2	3.1	4.0
7.0 or less	3.1	(1.5)*	3.1

* One patient only.

A color index was not calculated for each patient, but the anemia, when present, tended to be slightly hypochromic, although the cells were normochromic in many. These observations were confirmed by morphological examination of blood smears. Leukocyte counts were performed on all 200 patients. A leukocyte count greater than 10,000 cells per cubic millimeter was noted in only 72 patients (36%), of whom 52 had counts between 10,000 and 15,000 cells per cubic millimeter. One hundred fourteen patients (57%) had initial counts of between 5,000 and 10,000 leukocytes per cubic millimeter, and 14 patients (7%) had counts of less than 5,000 cells per cubic millimeter.

Stained smears of peripheral blood from 122 patients were examined. In most smears, nothing of diagnostic significance was noted. The most frequent abnormalities in the erythrocytes were increased regeneration, increased rouleaux formation, and hypochromasia. Toxic granula-

tion of the polymorphonuclear leukocytes, left-shifted granulocytes, and myeloid immaturity were frequently seen. Reticuloendothelial cells were observed in 37 patients, with evidence of phagocytosis in 11 of these. In only a small percentage of cases was the first drop of blood from the ear lobe examined. On the basis of experience in recent years, it is reasonable to assume that a higher incidence of phagocytic reticuloendothelial cells would have been found if the examination had been performed on a smear prepared from the first drop of blood.

Examinations of sternal marrow were not performed routinely on patients in this series. This examination was carried out as a part of the differential diagnostic survey in six patients, but no consistent changes were observed. The erythrocyte sedimentation rate (Westergren method) was recorded for 189 patients. The rates were 30 mm. or less per hour in 14 patients, between 31 and 60 mm. per hour in 52 patients, between 61 and 100 mm. per hour in 83 patients, and more than 100 mm. per hour in 40 patients.

COMMENT

There are no hematological findings that are particularly diagnostic of bacterial endocarditis. We wish to emphasize the frequency with which anemia occurs in bacterial endocarditis and to stress the importance of anemia as a diagnostic point when some of the more familiar manifestations of the disease may be absent. The anemia may be of sufficient degree to simulate a primary hematological disorder, as illustrated by selected cases from this series.[5] If bacterial endocarditis is suspected clinically, the finding of phagocytic reticuloendothelial cells in the first drop of blood obtained from the ear constitutes strong confirmatory evidence, although this finding may be present in other conditions.

TABLE 3.—*Erythrocyte Counts in 191 Cases of Bacterial Endocarditis*

Cells per Cu. Mm., Millions	Males	Females	Total
5.0 or over	1	1	2
4.0-5.0	57	27	84
3.0-4.0	57	30	87
2.0-3.0	10	6	16
2.0 or less	2	0	2
Total	127	64	191

Anemia, which was present in 75% of patients in our series, was exceeded in frequency only by cardiac murmurs and positive blood cultures. The incidence of fever (75%) was the same as that of anemia. Anemia was present more frequently than evidence of embolization (61%), splenomegaly (44%), cardiac enlargement (37%), or clubbing of the fingers (17%). From these figures, it will be noted that the manifestations classically associated with bacterial endocarditis were present in a substantially smaller percentage of cases in our series than in previous reports in the literature, based on necropsy material. Several reasons for this difference are apparent. The manifestations in our patients were tabulated at an earlier stage of the disease. Furthermore, in a series of patients examined post mortem, evidence of embolization, splenomegaly, or cardiac enlargement that was not apparent clinically might be found. It is possible that antibiotic therapy, which many patients receive before the diagnosis is reached, may alter the clinical picture from that observed before the advent of antibiotic therapy. It is believed that our data, tabulated from clinical evaluation rather than from necropsy findings, represent more accurately the disease as seen by the clinician.

Some of the patients in this series were anemic before they came to the clinic and had been treated with iron, liver extract, or blood transfusions. This was true of at least 28 patients (14%). Despite the fact that a number of patients had received transfusions of whole blood a short time before coming to the clinic, no adjustment was made for the resultant transient elevation of hemoglobin and erythrocyte values in the foregoing analysis. Liver or iron therapy, of course, proved ineffective in correcting anemia of this type.

Many patients have been seen in recent years after they had received one or more short courses of antibiotic therapy for a febrile illness that later proved to be bacterial endocarditis. Inadequate antibiotic therapy may temporarily suppress the fever and render the blood stream sterile but does not eliminate the bacterial endocarditis. In the absence of fever, bacteremia, and the less common manifestations of bacterial endocarditis, a soft systolic murmur may not be considered significant. In view of these observations, anemia assumes greater importance in the diagnosis of bacterial endocarditis. It has long been said that if the patient has a cardiac murmur and an unexplained fever, bacterial endocarditis should be considered; to this might be added that if the patient has a cardiac murmur and an unexplained anemia, even without fever, bacterial endocarditis should be considered. Because of the few cases in which a murmur is transient, is first noted late in the course of the disease, or is not considered suggestive of a valvular lesion, it might also be said that if the patient has an unexplained fever and anemia, despite the absence of a cardiac murmur suggestive of valvular heart disease, bacterial endocarditis should be considered. The common practice of attributing a soft systolic murmur to anemia can be misleading in such cases. Detailed reports of cases from our series that illustrate these maxims are to be published.[5]

SUMMARY

In a series of 200 cases of bacterial endocarditis, anemia was found on initial examination in 150 patients (75%). Anemia was commoner than evidence of embolization (in 61%), splenomegaly (in 44%), cardiac enlargement (in 37%), or clubbing of the fingers (in 17%). Since inadequate antibiotic therapy may temporarily suppress the fever and bacteremia, the association of a cardiac murmur and an unexplained anemia should suggest the possibility of bacterial endocarditis. Because occasionally cardiac murmurs may be absent in bacterial endocarditis, the association of an unexplained fever and anemia should also suggest the possibility of this disease.

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HUMAN THROMBIN AS VEHICLE OF INFECTION IN HOMOLOGOUS SERUM HEPATITIS

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The increasingly wide use of blood and blood products in medical practice has carried with it an increasing risk of homologous serum hepatitis (viral hepatitis B) among recipients of these materials. With the development, by Cohn and co-workers,[1] of techniques for the fractionation of the plasma proteins and with the widespread clinical use of the blood fractions thus produced, the question of whether these fractions might transmit homologous serum hepatitis has become a pressing one. The gamma globulin fraction, as prepared by ethyl alcohol (ethanol) precipitation, appears to be free of the agent of homologous serum hepatitis,[2] despite the fact that individual lots of gamma globulin may represent the pooled plasmas of thousands of donors.[3] It would appear that, in the preparation of this fraction by ethyl alcohol, the virus is inactivated, eliminated, or neutralized.[3] The albumin fraction prepared in this way has not been shown to contain the virus, and the albumin concentrates now in use are apparently free of it.[4] In any event, it has been demonstrated that this product can withstand the degree of heating required to inactivate the virus.[5] Homologous serum hepatitis has not been reported following the use of antihemophilic globulin, as prepared by the ethyl alcohol precipitation method.

The widespread acceptance of preparations of thrombin for use in local hemostasis is an indication of the value of these preparations in surgical procedures. The human thrombin used in the cases reported here was prepared from Cohn's "Fraction III-2" by the ethyl alcohol fractionation method. Prothrombin is first isolated and is subsequently activated to thrombin with thromboplastin, in the form of a placental extract. After Seitz filtration the thrombin is dried from the frozen state, usually in the containers in which it is to be distributed.

This report is concerned with the appearance of homologous serum hepatitis following the use of thrombin thus prepared from human plasma pools. Several hospitals in the New England area were affected. An outbreak in one of these has already been reported.[6] This was not substantiated by study of the material in volunteers. The present report concerns epidemiological observations on the epidemic in another of the affected hospitals, together with the results of studies in volunteers on two lots of the suspected thrombin. Discussions with the manufacturer revealed that there had been no unusual features in the production of the two lots under study. Both lots were processed at about the same time, and the placental extract used was the same in both cases. This extract was not used for any other lots, and none remained that could be examined for the presence of the agent of homologous serum hepatitis.

OUTBREAK IN MAINE GENERAL HOSPITAL

Since 1944 cases of viral hepatitis that could be attributed to previously transfused blood or plasma have been seen at this hospital with a frequency of at least one per year; the maximum number in any one year has been three. During 1950, however, and up to April, 1951, 18 cases of homologous serum hepatitis were observed. The available data indicated that the disease had been transmitted by some agent or technique used in the hospital. Of these 18 patients, 15 had undergone operations by the neurosurgical service and 3 by the general surgical service. These had been performed, in the latter three cases, during March and September, 1950, and, while all three had received either blood or plasma, none, as far as could be determined, received human thrombin. These three cases may be considered to reflect the endemic incidence of the disease at this institution.

Prior to this sharp rise in incidence of hepatitis, thrombin of bovine origin had been used at the hospital. Unfortunately, the exact date on which human thrombin

† Deceased.

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From the Maine General Hospital (Drs. Porter, Shapiro, and Maltby); the Children's Hospital of Philadelphia and the Department of Pediatrics, School of Medicine, University of Pennsylvania (Drs. Drake, Barondess, Bashe, and Stokes); and the Laboratory of Biologics Control, National Microbiological Institute, National Institutes of Health, United States Public Health Service, Department of Health, Education, and Welfare (Drs. Oliphant, Diefenbach, Murray, and Leone). Dr. Barondess is a Research Fellow, Communicable Disease Center, and Dr. Bashe, a Research Fellow, National Institutes of Health, United States Public Health Service.

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was substituted for the bovine material is unknown. Shipments of human thrombin were received on May 24, 1950, June 27, 1950, and July 25, 1950; these were stored in the hospital pharmacy for an unknown period, until the supply of bovine thrombin in the operating room was exhausted. From the amounts of thrombin solution recorded on the anesthesia sheets, as contrasted with the amounts of bovine thrombin generally used, it appeared that all the neurosurgical patients in whom hepatitis developed had received human thrombin at the time of operation. The serial numbers of the thrombin solutions used were not recorded on the patients' charts. Between July 13, 1950 (the date of operation of the first patient in whom hepatitis later developed), and Jan. 8, 1951, 75 persons were operated on by the neurosurgical service. Of these, 48 received thrombin at operation and 27 received no thrombin. Among the former group, there were 15 cases diagnosed as homologous serum hepatitis (31%), while in the latter group no cases were found.

It appears that, even after the human thrombin was introduced into the operating rooms, there were some operating days on which bovine thrombin was used in an effort to use up these stocks. These facts are reflected in a review of our records, revealing several instances in which patients operated on the same day received thrombin without hepatitis developing, but there is no instance in which two or more patients were operated on the same day and received thrombin, with subsequent development of hepatitis in only one. It is perhaps of some significance that two donors, whose blood had been administered to two patients in whom hepatitis later developed, had donated blood two and three times, respectively, within the previous two years, and hepatitis developed in none of these recipients.

The cases in this outbreak are summarized in table 1. It will be seen that the incubation periods ranged from 54 to 171 days; the latter figure is somewhat long in terms of the usual incubation periods seen in this disease, but the case is included because the man had known exposure to the icterogenic thrombin solution and because the incubation period in his case, while slightly longer than usual, was not long enough to make it highly improbable that hepatitis was contracted at operation. The onset in most of the cases was insidious, and several patients were unaware of the hepatitis until it was discovered on follow-up physicial examination.

There were three fatalities in the series; one of these was apparently unrelated to the hepatitis. When this case is omitted, the fatality rate in this outbreak was 11%. It is of some interest that the two patients who died of hepatitis had the shortest incubation periods, 54 and 55 days, respectively. While this suggested a relationship between incubation period and severity of illness, this was not borne out by the cases with the longest incubation periods, since these were not especially mild in relation to cases with moderate incubation periods. There appeared to be no relation between severity of illness and the amount of thrombin solution used at operation.

TABLE 1.—*Outline of Cases of Homologous Serum Hepatitis*

Case	Diagnosis	Date of Surgery	Procedure	Blood Transfusion, Cc.	Onset of Hepatitis	Result	Incubation Period, Days
1	Ruptured lumbar disk	July 13, 1950	Laminotomy	0	Nov., 1950	Mild, recovered	109
2	Cord tumor suspect	Aug. 2, 1950	Laminectomy	500	Early Nov., 1950	Mild, recovered	90
3	Ruptured disk	July 27, 1950	Laminotomy	500	Nov. 2, 1950	Moderately severe, recovered	98
4	Traumatic transverse myelitis	Aug. 17, 1950	Exploratory laminectomy	750	Nov. 26, 1950	Mild, recovered	101
5	Ruptured disk	Aug. 18, 1950	Laminotomy	0	Dec. 14, 1950	Mild, recovered	119
6	Cord tumor	Aug. 28, 1950	Laminectomy	1,000	Dec. 14,1950	Moderately severe, recovered	109
7	Ruptured disk	Sept. 6, 1950	Laminotomy	0	Dec. 6, 1950	Mild, recovered	92
8	Skull fracture	Sept. 21, 1950	Craniotomy	0	Dec. 25, 1950	Mild, recovered	95
9	Meningioma	Nov. 1, 1950	Craniotomy	1,000	Dec. 25, 1950	Died, autopsy	54
10	Trigeminal neuralgia	Nov. 6, 1950	Retrogasserian neurectomy	500	March 29, 1951	Moderately severe, recovered	143
11	Reticulum cell sarcoma	Nov. 30, 1950	Laminectomy	500	March 21, 1951	Died, metastasis to liver	112
12	Ruptured disk	Nov. 30, 1950	Laminotomy	500	Jan. 24, 1951	Died, autopsy	55
13	Ruptured disk	Dec. 8, 1950	Laminotomy	0	March, 1951	Mild, recovered	82
14	Intracranial aneurysm	Dec. 11, 1950	Craniotomy	1,500	June 1, 1951	Mild, recovered	171
15	Ruptured disk	Jan. 8, 1951	Craniotomy	1,500	March 30, 1951	Mild, recovered	81

VOLUNTEER STUDIES

Because of the close epidemiological correlation between the use of human thrombin and the occurrence of homologous serum hepatitis at the Maine General Hospital, and in view of the lack of specific tests or methods for isolating the virus or of any demonstrable susceptibility in animals, it was deemed advisable to test samples of the thrombin in volunteers. Two volunteer studies were done, using in experiment A a sample of the thrombin that had been used at the Maine General Hospital and in experiment B a sample from the other lot incriminated in the other New England hospitals affected but obtained directly from the manufacturer. Institutionalized healthy male volunteers, over 19 and below middle age, who had been screened on the basis of medical history, physical examination, and a battery of liver function tests, including urine bilirubin, urine urobilinogen, serum bilirubin, thymol turbidity, thymol flocculation, and cephalin flocculation, were used as experimental subjects. The samples of dried thrombin were dissolved in a solution of sterile isotonic sodium chloride to final concentrations of 500 units per cubic centimeter in experiment A and 1,000 units per cubic centimeter in experiment B. Each volunteer received a subcutaneous injection of solution representing 1,000 units of throm-

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bin. These men were then given, at intervals of one week or less, physical examinations and complete batteries of liver function tests. They were admitted to the institution hospitals when jaundice or other signs and symptoms of hepatitis developed. All volunteers were under medical surveillance for four to five months after inoculation.

The results of the two experiments are summarized in table 2. It will be seen that in almost 50% of the total volunteer group hepatitis with jaundice developed, and that in an additional 20% hepatitis without jaundice developed. The illnesses, in general, were mild to moderate, with the exception of one man in experiment A. This person, 28 years of age, was severely ill for seven days and remained icteric, with anorexia and extreme fatigability, for two months. He was finally discharged as recovered about 80 days after onset. In the cases described as hepatitis without jaundice, one or more of the following conditions developed after the indicated incubation periods: malaise, anorexia, nausea, or abdominal pain. Abnormalities in serum bilirubin and serum flocculation tests, sufficient to establish the diagnosis of hepatitis, developed in all of these cases.

TABLE 2.—*Incidence of Homologous Serum Hepatitis in Volunteers After Subcutaneous Administration of 1,000 Units of Human Thrombin*

Experiment	Lot	Volunteers	Hepatitis With Jaundice	Incubation Period, Days	Hepatitis Without Jaundice	Incubation Period, Days	Total No. of Cases of Hepatitis
A	1	5	2	77, 77	2	43, 59	4
B	2	10	5	73, 76, 78, 89, 101	1	About 100	6
Total.....		15	7		3		10

COMMENT

These findings confirm the presence of the agent of homologous serum hepatitis in the samples of thrombin tested. In addition, they provide conclusive evidence that the cases of homologous serum hepatitis at the Maine General Hospital were due to the batch of thrombin in use there in 1950. That these cases concerned primarily neurosurgical patients, when considered in relation to cases of patients with homologous serum hepatitis in the other hospitals who were also convalescent from neurosurgical procedures, is a reflection of the extent to which gelatin preparations soaked in thrombin solutions are used in such procedures, in contrast to their use in general surgery or in other divisions of general hospitals.

On the basis of the evidence available it is not possible to state whether the virus was originally present in the plasma used for the manufacture of this thrombin, and escaped through the fractionation process, or whether it was accidentally introduced through the placental extract. The fact that the same extract was used in the preparation of both virus-contaminated lots suggests that the placental extract may well have been the source of the icterogenic activity of this thrombin.

In the light of past experiences, reported and unreported, the indiscriminate use of blood fractions whose safety has not been demonstrated must be viewed with grave concern and their value weighed carefully against the calculated risk of inducing homologous serum hepatitis in recipients of such biological materials. It seems obvious that all commercial preparations containing human fluids or blood products must be considered as potential sources of homologous serum hepatitis until some method for demonstrating the presence or absence of the causative virus in them has been developed.

SUMMARY AND CONCLUSIONS

An outbreak of homologous serum hepatitis (viral hepatitis B) among patients of the neurosurgical service of a general hospital is reported. The relation of this epidemic to a batch of human thrombin used at the hospital is established both by epidemiological investigation and by demonstration of the agent of homologous serum hepatitis in the thrombin, through studies in volunteers. Evidence of the presence of this virus in another batch of human thrombin obtained directly from the manufacturer was obtained by means of volunteer studies, and possible mechanisms of contamination of these lots of thrombin are briefly considered.

Caution appears justified in the use of thrombin of human origin, as well as in the use of other human blood products. Bovine thrombin is the hemostatic agent of choice, in view of the lack of danger of homologous serum hepatitis following the use of this material.

1740 Bainbridge St. (46) (Dr. Stokes).

Pancreatic Pain.—Pancreatic pain is characterized by its posterior site, its exacerbation at night, and, when the patient is in the supine position, its relief when the trunk is flexed or when pressure is applied to the epigastrium, its persistence, and the requirement of narcotics for relief. The pain originates in an organ, which is peculiar with respect to its innervation. The pancreas spreads across such an area that it is innervated by both splanchnic nerves, but, in addition, somatic pathways may be involved because most of the anterior surface of the pancreas is covered by parietal peritoneum, which blends with the anterior layer of the transverse mesocolon. The localized perforation of an ulcer onto the pancreas produces a localized type of pain. More severe involvement of the pancreas, such as acute diffuse interstitial pancreatitis, may produce a localized pain; but, in addition, it may produce extensive necrosis of mesenteric fat which may cause the pain to spread to many other parts either caudad or cephalad. . . . The pain of carcinoma of the pancreas frequently depends on the degree of infiltration of the lesion. The pain patterns of pancreatic disease are thus dependent on several factors other than the site of the organ. In the lesion that is localized, as is focal pancreatitis, which may result from chronic perforation of a peptic ulcer, the pain is referable to the head or to the body of the pancreas. If the tail of the pancreas is involved by a malignant lesion of the stomach or by perforation of an ulcerating malignant lesion of the stomach, the pain may be referred to the left lower quadrant of the abdomen. In cases in which pancreatitis is localized in the head of the pancreas, the pain may be referred only to the right and posteriorly, and, because the organ is innervated bilaterally, diffuse disease involving head, body, and tail of the pancreas may produce an encircling or girdle type of pain.—L. A. Smith, M.D., Pain Patterns in Diseases of Upper Part of the Abdomen, *Proceedings of the Staff Meetings of the Mayo Clinic*, July 29, 1953.

EVACUATION AND CARE OF CASUALTIES IN AIRCRAFT

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and
Major Robert W. Merkle, U. S. A. F., Langley Air Force Base, Va.

The most pressing problem facing the nation today is the maintenance of adequate defense forces for security within the national economy. In order to reach this goal, we must examine the usefulness of new ideas from all fields of activity. Throughout the ages, we have seen that both the strategy of warfare and the progress of civilization in peacetime are directly dependent on changes in transportation. With the growth of air transportation, we must orient ourselves to the impact this latest advance will have on the nation's medical problems in peace and war.

One of the most challenging developments in air transportation has been rotary wing aircraft, the helicopters. These aircraft, in addition to having some of the qualities of fixed wing aircraft, have the unique capability of taking off or landing from virtually any surface. Our vision must not be so limited, however, that we speak only of the helicopter in this connection. Research is now in progress that will make fixed wing aircraft capable of similar take-off and landing performance. In aviation, the impossible of yesterday may be the obsolete of tomorrow.

The helicopter's many uses by enthusiastic military and civilian agencies have been described in recent months by all news mediums. Now, as with all new drugs, equipment, or procedures in medicine, we must follow the first flush of enthusiasm with an appraisal of the actual capabilities of this new form of air carrier. We must determine how the helicopter can be used in the broad complex of medical care.

The basic problem of peacetime medical care is not different from that of war. This problem is the timely bringing together of the physician, the patient, and the means of treatment. In military and civilian groups, medical care revolves around large medical units located at centers of population. Progressively smaller units extend from these centers. At the periphery, in civilian medicine, the country physician practices alone in a sparsely settled community, without the facilities of a group clinic or a health center. In military medicine, his counterpart is the surgeon located at the fringe of battle or at an isolated station.

To analyze the influence of the helicopter on these systems, the difference between an air and a surface carrier must be clarified. In the past this has not been done successfully because of attempts to make direct comparison of the helicopter to the truck. Evaluation was based on the helicopter's performance over the same routes, at the same distances, and to and from the same places served by trucks. The fallacy of this is the failure to recognize that those distances and routes were first determined by the capabilities of the truck. To correct this, we must appreciate the distinct formula of aviation. An aircraft's capacity to travel great distances simplifies all the processes of a transportation system; it reduces the frequency of stops, the time in transit, and the size of control and administrative systems required. In addition, long-range aircraft can provide the means for processing or care while in transit, whether a perishable food, a television news film, or a human casualty is being transported. With these advantages, however, air transportation has been handicapped because of the need for open ground for terminals. The helicopter can meet the long-range carrier at these terminals and can transport cargo or passengers to and from the battle front or metropolitan center. This junctional operation makes possible fully effective air transportation in all the problems of movement and, in turn, related problems of medical care.

One example of movement in medical care is shown in figure 1, the system of casualty evacuation now used by the military services. From the battle line, casualties are moved by any available means to the first treatment site, usually the battalion aid station or a regimental collecting station. From these, evacuation is made by ground vehicle or helicopter to a clearing station close to, or combined with, a surgical hospital. There casualties have all the advantages of early lifesaving care close to the front lines. Those who can be returned to duty in a short time are usually retained at this site. Others are removed, as shown, to evacuation and field hospitals farther behind the front lines but still in the combat zone. The combat zone normally varies in depth from 50 to 100 miles. Patients requiring further care are carried by hospital trains, ground ambulances, or air transports to the communication zone. There treatment is continued in general hospitals, hospital centers, and convalescent centers.

This system has saved lives and conserved manpower because of the coordinated efforts of the medical and transportation personnel of all the military services. The advantages of good forward surgical care and rapid transportation have resulted in less than 5% of all wounded being discharged because of disability.[1] This record speaks for itself. The evacuation system was designed by Major Jonathan Letterman 100 years ago. It was developed on a pattern that had many way stops for treatment facilities. The capabilities of the transport carriers, the mule-drawn wagons and the primitive railways used during the Civil War, determined the location of treatment units. The principles of this evacuation system, requiring a balanced interrelationship of its component factors of patient, carrier, and treatment facilities, are still valid for any plan of evacuation.

Figure 2 shows the possibilities of complete use of the air carrier. In this system, casualties would receive first-aid treatment and then be evacuated to an emergency treatment site by helicopter or other light aircraft. Evacuation here is an extra service obtained from aircraft that serve the primary function of transporting blood, sup-

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1. Hays, S. B.: The Army Medical Service, U. S. Armed Forces M. J. 4: 167-174 (Feb.) 1953.

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plies, personnel, or equipment to the front. After appropriate treatment, the majority of the patients would be transferred to larger aircraft, which also had brought troops or supplies forward. These air carriers would bypass the present medical care stations of the combat zone, depositing casualties at well-equipped and well-staffed

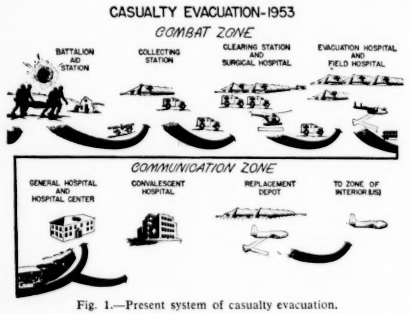

Fig. 1.—Present system of casualty evacuation.

hospitals in rear areas. In some instances, casualties could be evacuated directly from forward areas reached by certain types of assault aircraft, as shown by the top arrow in figure 2. Use of the helicopter-airliner combination would eliminate many of the medical facilities and supplementary means of transportation now used in the combat zone. This is especially important, because more than 70% of all the wounded in Korea require hospitalization outside of the combat zone.[1] The combat area would actually require only emergency treatment units and stand-by facilities that might be needed in the event of a catastrophe or the occasional breakdown that may occur in any movement system.

If air transportation were developed to its maximum potential, even greater economies would be effected.

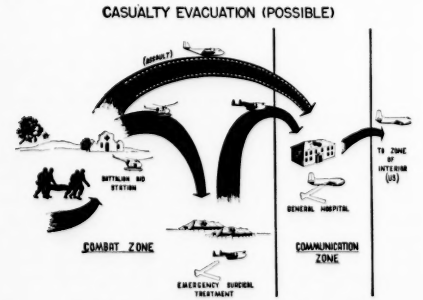

Fig. 2.—Proposed system of casualty evacuation.

Large airliners could be converted to aerial hospitals of 100 beds, instead of serving only as ambulance planes. As shown in figure 3, these hospitals would be complete, possessing wards, operating and treatment rooms, kitchens, laboratories, and morgues. Facilities of this type could be made available by use of light, portable equipment to convert the interior of the aircraft for return movement after the forward delivery of personnel or supplies. This combination of care and evacuation in aircraft, formerly performed in hospital ships, would permit almost all wounded to be returned directly to the United States without definitive hospitalization overseas. Time would be saved by elimination of the necessity to relocate civilian medical effort, and the cost of medical care at the front would be reduced. These savings would more than compensate for the manpower conservation supposedly accrued to a commander by retention of a great percentage of his wounded men in the battle area until they are well. Such retention would be unnecessary, as air transportation would still permit rapid return of fit personnel to combat from rear areas well below the time-space factors formerly used for surface transport.

Incorporation of this plan in our medical planning for the future presents the attractive possibility of practically no dislocation of the civilian medical economy in war. Civil and government facilities would be built and planned in peace for the loads of war. Physicians normally caring for the military and civilian population, as well as those readied for civilian defense needs, would continue at their routine duties. Between this remote pos-

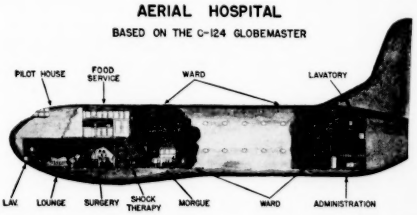

Fig. 3.—Cross section of hospital plane showing facilities for patient care in transit.

sibility and present requirements, however, there is certainly some level at which an immediate goal can be established. The many details and specific decisions required for this are a task for the Department of Defense; nevertheless, these matters demand the attention of all physicians, for some of the same principles apply to the problems of peacetime medical care, especially with regard to sparsely settled areas. The junctional use of helicopters with airliners and distribution points provides the means of disseminating medical science and care to all areas of the nation. In addition, disasters, whether man-made or natural, affecting large groups of the population could be handled either by medical support to, or mass evacuation from, the involved areas.

As physicians, in this period of international tension, it is appropriate that we consider these developments in air transportation in relation to future planning and air power in general. New techniques of warfare, if we cannot prevent war, will multiply our medical problems. Military medicine will be revolutionized. The success of any new evacuation technique will depend largely on the degree of air supremacy we are able to achieve. Without air supremacy it will be impracticable to have any system of evacuation, any system for combat, or even any war. If an aggressor nation should gain air superiority, it would

be futile to plan evacuation of casualties by hospital train or ground ambulance. It would be futile to plan to move troops or patients over torn-up roads, bridges, and rail beds. Obviously, air power must be developed to such a degree that we as a nation can survive. As a by-product of the necessary growth of air power, increased air transportation by both helicopters and airliners can be applied to the problems of medical care. More important, its application to defense can benefit the national economy by permitting reduction of permanent military forces. In order to support small standing forces, it would only be necessary to have reserves of civilian militia that could be alerted for air transport to any trouble area. This, with air power's advantages of flexibility, surprise, and immense striking power would be a forceful deterrent to war and, to some extent, a guarantee for peace.

SUMMARY AND CONCLUSIONS

Transportation through the ages has changed the strategy of war and the activities of peace. The unique capability of helicopters, combined with larger air carriers, provides the means to furnish civilian and military medical care at great economies in personnel and facilities. Air transportation reduces the need in evacuation of wounded for many treatment units formerly required because of the limited facilities of surface carriers. Air transportation can also provide care in transit. The full acceptance of the helicopter-airliner combination would permit elimination of many medical facilities and supplementary means of transportation now used in combat zones. Additional savings to the nation's medical economy could be obtained by the use of aerial hospitals. There would be practically no relocation of civilian medical effort in war.

In peacetime the combined use of helicopters and airliners would facilitate medical care in all areas of the nation, as well as provide support in any disaster. The growth of air power would also aid total national economy by permitting a reduction in permanent military forces through development of a civilian militia reserve that could be easily transported by air.

Each of us, civilian or military man, has a personal responsibility to participate in planning for our country's future. We must properly use air power to improve medical care, save medical manpower, and advance the national economy, in peace or war.

NOTES ON A SERIES OF BRAIN TUMORS

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The outcome of any surgical attack on an intracranial tumor depends on the cell type of the lesion and its position within the skull. Tumors composed of glial elements, the true brain tumors, have a much poorer prognosis than lesions with basic cell types that are fibroblastic, glandular, or vascular in origin. Tumors composed of these three types might well be termed intracranial rather than brain tumors, since their cell types are not those of the brain itself. Glial tumors tend to infiltrate the brain to a varying extent, and, for this reason, total extirpation is frequently impossible. Furthermore, since these tumors are invasive, the neurological deficits they produce are due to permanent brain damage and may persist even after the tumor has been extirpated. Nonglial tumors, on the other hand, do not invade the brain but force it to one side. A line of cleavage always exists between such lesions and the brain, total extirpation is possible, and, since neurological deficits are caused by brain compression rather than invasion, such deficits may completely disappear after removal of the tumor.

The position of a lesion largely determines the success or failure of surgical removal. Tumors of the convexities of the brain are more accessible than tumors in the subfrontal or subtentorial regions. A meningioma of the inner end of the sphenoid ridge, closely involved with the carotid artery, or a perineurial fibroblastoma in the cerebellopontine angle, adherent to the brain stem and extending upward through the incisura, (although both are tumors that may be totally extirpated when found in other regions) may become, because of its position, as impossible to remove completely as a glioblastic tumor of the convexity of the brain. On the other hand, a relatively benign glioblastic tumor involving the tip of the frontal, temporal, or occipital lobe may be entirely eradicated by removal of the lobe.

Finally, the stage at which diagnosis of a brain tumor is made may influence the result of surgery. Here again, the position of the lesion is important. Tumors that involve active areas of the brain such as the motor cortex, causing convulsions or paralysis; the optic radiations, producing visual field defects; or the cerebellar hemispheres, with changes in equilibrium; because of these symptoms, call prompt attention to the brain as the site of the lesion. But tumors in silent brain areas, such as the frontal lobes, the right temporal lobe, in the midline above or below the tentorium, may produce no clinical findings that can be related in any way to the brain. Intermittent headache and vomiting may be the only symptoms, and they can be due to many causes other than brain tumor. When visual loss, progressive headache, and uncontrollable vomiting appear, an intracranial lesion is first suspected. The neurosurgeon at times wonders why the attending physician was so late in reaching a diagnosis. The reason is, of course, that the antecedent symptoms were nonspecific. The alert physician naturally considers first the more common causes for a patient's complaints, and only when repeated and thorough examinations have ruled these out or when new symptoms appear suggesting an intracranial complication does he consider a less common lesion, such as a brain tumor. Consequently, brain tumors often are not diagnosed while they are still in a stage that might make total extirpation reasonably easy.

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In addition, as the tumor expands and causes increased intracranial pressure the general condition of the patient deteriorates until he is a poor surgical risk.

After it has been established that an intracranial mass lesion is the probable cause of a clinical picture, localization of the tumor is not difficult. With modern roentgenographic technique and ventriculography or arteriography, 95% of all intracranial mass lesions can be accurately localized.

Further, brain tumors can be divided into five groups; glial cell tumors, fibroblastic tumors, glandular tumors, which are preponderantly pituitary, vascular tumors, and a mixed group of metastatic, congenital, and other tumors of many different types that occur much less frequently than the four larger groups.

SURVEY OF CASES

A survey has been made of 1,733 cases of verified brain tumor seen on the neurosurgical service of the Hospital of the University of Pennsylvania from Jan. 1, 1930, to Jan. 1, 1950. These tumors have been classified in the five groups, according to their pathology, in an attempt to learn the prognosis and length of surgical survival in each group. In these 1,733 cases, 496 operative and 130 nonoperative deaths occurred, a case mortality of 36%. Among the 1,603 patients who had surgery, 1,926 operative procedures were performed, with 496 postoperative deaths, an operative mortality of 25%. As of Jan. 1, 1953, 409 patients, or 25%, were living; 47 had survived 20 years or more. In addition, 48 patients lived 10 years or over; 77 lived 5 to 10 years; and 573 survived surgery less than 5 years. Among the 48 patients who lived 10 years or more 3 finally died of recurrence, and among those who lived 5 to 10 years the tumor recurred fatally in 49 instances.

Review of the tumor types among the 534 patients who lived for five years or over shows clearly the importance of this factor in prognosis (see table). There

Cell Type of Tumors in 534 Patients Who Survived Five Years or More After Surgery

	No. of Patients	%
Fibroblastic (meningiomas and acoustic neuromas)	203	39
Glandular (pituitary adenomas)	127	22
Gliomatous (astrocytomas)	84	16
Vascular (hemangiomas)	36	7
Miscellaneous types	84	16

were 203 fibroblastic tumors, the meningiomas and acoustic neuromas; 127 glandular lesions of pituitary origin; 84 gliomas, all of the slow-growing astrocytoma fibrillare or oligodendroglioma type; and 36 tumors of blood vessel origin. The remaining 84 tumors were divided among many subgroups. No patient with a glioblastoma multiforme or a malignant metastasis to the brain, from the lungs or elsewhere, survived over five years. Most of the patients died within three years.

The astrocytomas total 348 cases, or 20% of the entire series. Of these, 218 were cerebral and 130, cerebellar. The division of this group according to position of the tumor above or below the tentorium is necessary because of the apparent difference in life expectancy with the two types. Among the 218 patients with cerebral astrocytomas, 27, or 12%, are still alive. Of the 130 with cerebellar astrocytomas, 45, or 35%, are alive in 1953.

Of the 45 living patients who had cerebellar astrocytomas, 36 had cystic and 9, solid tumors. Survival was prolonged when the tumor nodule was removed from the cyst wall. The nine solid tumors lay laterally in the cerebellar hemisphere, so that complete removal was possible. No patient with a solid glioma of the vermis cerebelli lived over five years. In two additional cases of cerebellar astrocytoma, one solid and one cystic, the patients survived for 11 years and died of recurrence. Of the 47 patients with cerebellar glioma who survived beyond 10 years, 41 were able to return to work.

In the 27 patients with cerebral astrocytomas who are still alive, the tumors were located as follows: nine temporal, eight parietal, six frontal, and four occipital; all but five were in the right cerebral hemisphere in right-handed patients. Extensive resections were done, with apparently complete removal in all but one case. In this instance there was a recurrence of a cystic astrocytoma in the right parietal region after 16 years. The patient was operated on again and has been well and working ever since. Five additional patients with cerebral glioma lived over 10 years and died of intercurrent disease. Five others lived over five years; four died from recurrence and one, in an accident. In this group of 37 patients who lived five years or more, 25 returned to work.

Glial tumors, the true brain tumors, have a much more unfavorable prognosis than lesions composed of nonglial elements, the intracranial tumors. A glioma must be favorably situated within the cranial cavity and must have a highly specialized and slow-growing cell type, such as an astrocyte or an oligodendroglia, as its basic component to make complete extirpation possible or to assure a reasonable life expectancy after partial removal. All the fibroblastic tumors, regardless of location, should be vigorously attacked and every reasonable risk taken to accomplish complete removal. The position of the tumor and its accessibility determine the outcome of surgery. Pituitary adenomas respond well to intracapsular, subtotal extirpation with roentgen ray therapy. Vascular tumors, so commonly found in the cerebellum and almost always cystic, can be cured if the tumor nodule in the cyst wall is removed.

SUMMARY AND CONCLUSIONS

Results of intracranial surgery for tumors compare favorably with results of tumor removal in general. In this group of 1,733 patients, 534, or 30% lived five years or more after operation. Of the 1,733 patients, 626 died either before or shortly after operation, leaving 1,107 patients who could be followed up. In this group, 573 had lesions that were either rapidly recurring gliomas or metastatic carcinoma; none of these patients lived over five years, few over three years. If this unfavorable group is eliminated, 534 cases of tumors with better prognosis remain. All of these 534 patients, or roughly 49% of the 1,107 patients who were followed, lived five years or more, and 409 of them, or 35%, are still living, 4 to 23 years after surgery.

The skill and experience of the surgeon are vital in removal of a brain tumor; however, all his skill and experience are of no avail unless a tumor is relatively benign and is in an accessible position.

3400 Spruce St.

CLINICAL EVALUATION OF DEXTRAN AS A PLASMA VOLUME EXPANDER

Harry W. Bowman, M.D., Bethlehem, Pa.

At the termination of World War II, the advent of atomic destruction alerted the medical profession to the great need for emergency stockpiling of plasma and plasma substitutes. At present, three plasma substitutes are widely used, dextran, polyvinylpyrrolidone, and oxypolygelatin. "Plasma volume expander" is the accepted name for these materials, since there is no true substitute for plasma or whole blood. Plasma expanders may be divided into four groups: (1) Blood derivatives: albumin, plasma, and modified globin; (2) modified proteins: gelatin and oxypolygelatin; (3) polymerized carbohydrates: dextran; (4) plastics: polyvinylpyrrolidone.[1a]

My clinical experience with plasma volume expanders has been limited almost entirely to the evaluation of dextran. I have had very little experience with polyvinylpyrrolidone, and I have not used oxypolygelatin in any of my studies.

METHOD AND MATERIALS

I have administered more than 500 infusions of dextran (Plavolex), in 6% isotonic sodium chloride solution during an 18 month period. The first 76 infusions were studied under the protocol established by the National Research Council. Plasma volume, blood volume, hematocrit, and excretion studies were done on each of the original 76 patients before and after administration of 500 cc. of dextran solution. The temperature, pulse rate, respiratory rate, blood pressure, skin reaction and temperature, and orientation of each patient were recorded during all

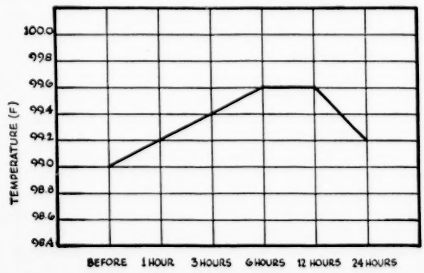

Fig. 1.—Average oral temperature among 76 patients before and during the 24 hour period following infusion of dextran solution.

dextran infusions. Unfavorable reactions occurred in two patients. These were characterized by itching, mild urticaria, severe chills, and a temperature rise to 103 F. These symptoms are typical of reactions to dextran but the reactions are easily controlled with the use of antipyretics and sedation. All of my original clinical studies were done on patients who were not receiving any drug therapy or who had completely recovered from anesthesia. The age group ranged from 18 to 60, and no patient had a chronic or an acute infection.

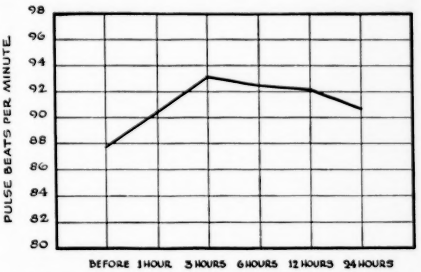

Fig. 2.—Average pulse rate among 76 patients before and during the 24 hour period following infusion of dextran solution.

Dextran is a polysaccharide, or polymer of glucose, manufactured from sucrose by a fermentation process. The coccus Leuconostoc mesenteroides produces an exocellular enzyme, which polymerizes glucose into a polysaccharide, forming the end product dextran. The molecular weight of dextran varies from 50,000 to 100,000, averaging 65,000 to 70,000, and approximates that of human plasma.

CLINICAL EFFECTS OF DEXTRAN INFUSION

Figure 1 shows that the average oral temperature rise after intravenous administration of dextran is not more than 0.8 F. Part of the temperature rise is probably due to postsurgical tissue reaction. The average pulse rate ranged from 86 to 94 beats per minute, which can be considered within normal limits. Figure 2 shows the radial pulse variations.

Other investigators [1] have shown the average increase in cardiac output after infusion of 500 cc. of dextran to be 30%. The cardiac stroke volume, peripheral venous pressure, right auricular pressure, and pulmonary capillary pressure are increased. A change of this nature is to be expected after a sudden increase in plasma volume. Figure 3 shows the average blood pressure changes after a single infusion of dextran. A rise in systolic pressure and a corresponding decrease in diastolic pressure reached the maximum at the third hour after administration of dextran. The clinical findings represented graphically correspond with physiological changes in cardiac activity.

Plasma volume and total blood volume studies have been of great interest. Figure 4 illustrates the average increase in plasma volume and in blood volume after an infusion of 500 cc. of dextran. The average plasma volume increase was 450 cc., and the average blood volume

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Read before the Section on Anesthesiology at the 102nd Annual Session of the American Medical Association, New York, June 3, 1953.

The dextran (Plavolex) used in this study was furnished by the Chemical Division of R. K. Laros Company, Bethlehem, Pa., and by Wyeth Laboratories, Philadelphia. The modified human globin was furnished by Sharp & Dohme, Inc., West Point, Pa.

1a. Weiss, W. A.: Plasma Volume Expanders, personal communication to the author.

1. Symposium on Plasma Volume Expanders in the Treatment of Shock, A. M. A. Arch. Surg. **63**: 718-749 (Dec.) 1951.

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increase was 550 cc. The response to dextran, as indicated by these figures, has been most gratifying to both the surgeon and the anesthesiologist, particularly in the treatment of burns, traumatic shock, and surgical shock.

Figure 5 shows the average concentration of dextran in the plasma before and at intervals after infusion. A rapid rise of the dextran level to 750 mg. per 100 cc. is

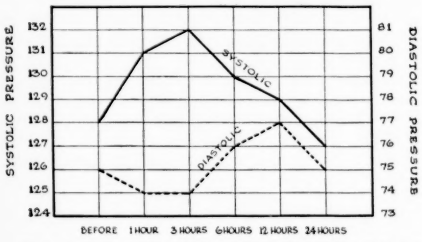

Fig. 3.—Average systolic and diastolic blood pressures among 76 patients before and during the 24 hour period following infusion of dextran solution.

noted in the first hour after infusion of one unit. At the end of the first hour the level begins to fall gradually and continues to fall during the next 24 hours. This graphic representation illustrates dextran's valuable prolonged effect in maintaining plasma volume increase and its value in the emergency fluid treatment of shock.

Infusion of dextran was always preceded and followed by hematocrit studies. Figure 6 shows the hemodilution effect of dextran. The hematocrit fell from a normal level to a level of 39.2% during the first hour and gradually returned toward the normal level in the ensuing 24 hours. Although the drop in hematocrit was not serious, I believe this response is an indication that the use of whole blood is essential in traumatic or surgical shock.

Data released by the National Research Council indicate that in animals 93% of intravenously administered

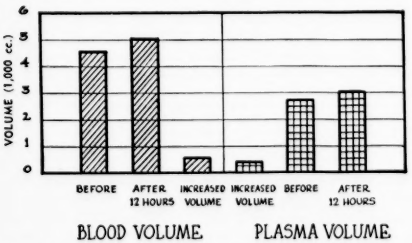

Fig. 4.—Average blood and plasma volumes among 76 patients before and 12 hours after infusion of dextran solution.

dextran is accounted for in the urine and in expired air within a 10 day period; 7% is probably metabolized in the body.[2] I believe that dextran is excreted and metabolized in humans in a corresponding manner. Excretion of 32.9% over a 24 hour period has occurred in my series. The excretion levels fall well within the limits required of a satisfactory plasma volume expander, as indicated in figure 7.

COMPARISON WITH OTHER PLASMA VOLUME EXPANDERS

My experience with polyvinylpyrrolidone has been limited; however, the clinical results from its use compare favorably with results from the use of dextran. Histological changes in certain body tissues are known to occur after infusion of polyvinylpyrrolidone, but I have not noted such changes after use of dextran. I have been impressed also by the evidence that dextran has interfered in no way with blood typing or cross matching in over 500 infusions. Dextran appears to be superior to oxypolygelatin, serum albumin, and plasma in its effect on plasma volume expansion. The table shows the comparative effects on plasma volume expansion of the four materials. The figures point to a prolonged satisfactory response with dextran. The remaining three substances fall short in the production of prolonged effect on plasma volume.

During the past six months, I have been successful in the clinical use of dextran combined with modified human globin. Modified human globin is the protein extract of red blood cells. It is packaged in the dehydrated form and

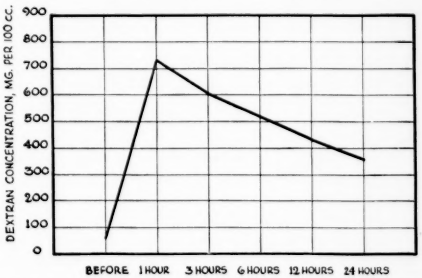

Fig. 5.—Average plasma concentration of dextran among 76 patients before and during the 24 hour period following dextran infusion.

is not readily soluble in dextran; however, it is soluble in 5% dextrose and water, and the resultant solution has the appearance of plasma. I have administered the globin preparation simultaneously with dextran, with good results. My work with this combination has been limited, and I cannot report on a convincing series of patients, but I can state that the patients have been safely supplied with a protein-rich solution plus a plasma volume increase. This form of intravenous therapy is extremely valuable in the treatment of burns, because of the osmotic and oncotic pressure effect and the protein intake. I have noted improved postoperative wound healing, particularly in the emaciated patient. This experience points to the possibly great therapeutic value of modified human globin and dextran in the treatment of the severely burned patient as well as the emaciated, undernourished patient and possibly in the postoperative care of the surgically treated patient. More extensive studies are being carried out at present with a combination of these two materials.

2. Hellman: National Research Council News Report, 1951. Hellman, and Becker: National Research Council News Report, February and April, 1952. National Research Council News Report, August, 1951.

COMMENT

I believe that dextran meets all the clinical requirements of a satisfactory plasma volume expander for the following reasons. 1. It rarely produces untoward reactions. 2. It does not cause antigenicity. 3. It is not retained for any significant period in the body and does not cause histological changes within the tissues. 4. It does not interfere with blood typing and cross matching. 5. It produces satisfactory blood volume expansion, as indicated by plasma volume and blood volume studies. 6. It is immediately available for administration and can be stored at any temperature above the freezing point.

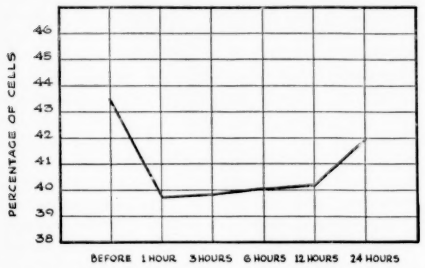

Fig. 6.—Average hematocrit reading among 76 patients before and during the 24 hour period following infusion of dextran solution.

*Comparison of Blood Volume Expansion Produced by Dextran, Gelatin, Serum Albumin, and Plasma**

Period After Infusion		Average Increase in Blood Volume, Cc.			
Hr.	Min.	Dextran	Gelatin	Serum Albumin	Plasma
..	15	1,000	960	857	830
..	45	1,100	751	972	1,173
1	15	960	1,118	526	657
2	30	1,000	1,113	573	649
3	45	1,100	704	908	691
5	..	1,350	521	1,183	281
6	..	1,275	647	797	111
8	..	1,100	440	1,342	521
20	..	275	152	236	—133

* Reproduced with the permission of Dr. G. M. Hyde, Donner Research Laboratories, University of Southern California, Los Angeles.

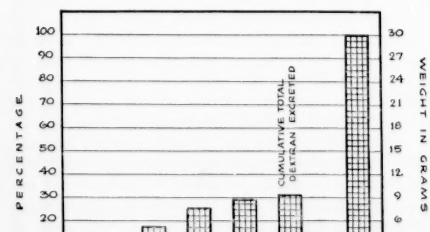

Fig. 7.—Average dextran excretion among 76 patients over the 24 hour period following its injection.

Space does not permit a detailed discussion of the many dramatic results obtained with the use of dextran in treatment for burns, traumatic shock, anuria, cerebral edema, postsurgical edema of the gastrointestinal tract, and pulmonary edema. I believe, however, that concentrations of 10% and 20% salt-free dextran will be of greater value, particularly in the treatment of burns and edema.

SUMMARY AND CONCLUSIONS

The results of clinical and laboratory studies of dextran are reported and prove, I believe, the great value of this material as a plasma volume expander. Studies in progress on the combined use of dextran and modified human globin are mentioned. I do not believe that polyvinylpyrrolidone or oxypolygelatin can be overlooked as potentially satisfactory plasma expanders, although at present their clinical administration is attended by some difficulty. Finally, plasma volume expanders are not, and probably never will be, satisfactory substitutes for whole blood. Whole blood is essential for the maintenance of normal human physiological function.

1828 Homestead Ave.

CLINICAL NOTES

NALORPHINE (NALLINE) ANTAGONISM TO RACEMORPHAN (DROMORAN) INTOXICATION

Edward F. Domino, M.D.
Edward W. Pelikan, M.D.
and
Eugene F. Traut, M.D., Chicago

Experiments with laboratory animals indicate that nalorphine (Nalline) is effective in antagonizing most of the effects of morphine,[1] codeine, dihydromorphinone (Dilaudid), metopon, methadone,[2] and meperidine (Demerol).[3] Successful clinical use of nalorphine to antagonize the respiratory depression caused by morphine, dihydromorphinone, methadone, and meperidine has been reported.[4] Chase, Boyd, and Andrews have

Associate Clinical Professor of Medicine (Dr. Traut) and instructors in pharmacology (Drs. Domino and Pelikan), University of Illinois College of Medicine, and from the Presbyterian Hospital.

1. (*a*) Hart, E. R.: N-Allyl-Norcodeine and N-Allyl-Normorphine: Two Antagonists to Morphine, J. Pharmacol. & Exper. Therap. **72:** 19 (May) 1941. (*b*) Unna, K.: Antagonistic Effect of *N*-Allyl-Normorphine upon Morphine, ibid. **79:** 27-31 (Sept.) 1943. (*c*) Hart, E. R.: Further Observations on the Antagonistic Actions of N-Allyl-Normorphine against Morphine, abstracted, Fed. Proc. **2:** 82 (March) 1943. (*d*) Hart, E. R., and McCawley, E. L.: The Pharmacology of N-Allylnormorphine as Compared with Morphine, J. Pharmacol. & Exper. Therap. **82:** 339-348 (Dec.) 1944. (*e*) Smith, C. C.; Lehman, E. G., and Gilfillan, J. L.: Antagonistic Action of N-Allyl-Normorphine upon the Analgetic and Toxic Effects of Morphine, Methadone Derivatives and Isonipecaine, abstracted, Fed. Proc. **10:**335-336 (March) 1951.

2. Smith and others.[1e] Huggins, R. A.; Glass, W. G., and Bryan, A. R.: Protective Action of N-Allyl-Normorphine Against Respiratory Depression Produced by Some Compounds Related to Morphine, Proc. Soc. Exper. Biol. & Med. **75:** 540-541 (Nov.) 1950.

3. Smith and others.[1e] Radoff, L. M., and Huggins, S. E.: Protective Action of N-Allylnormorphine Against Demerol, Proc. Soc. Exper. Biol. & Med. **78:** 879-880 (Dec.) 1951.

4. Eckenhoff, J. E.; Elder, J. D., Jr., and King, B. D.: N-Allyl-Normorphine in the Treatment of Morphine or Demerol Narcosis, Am. J. M. Sc. **223:** 191-197 (Feb.) 1952. Eckenhoff, J. E.; Hoffman, G. L., and Dripps, R. D.: N-Allyl-Normorphine: Antagonist to the Opiates, Anesthesiology **13:** 242-251 (May) 1952. Fraser, H. F.; Wikler, A.; Eisenman, A. J., and Isbell, H.: Use of N-Allylnormorphine in Treatment of Methadone Poisoning in Man, J. A. M. A. **148:** 1205-1207 (April 5) 1952.

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reported successful treatment of dihydromorphinone and racemorphan poisoning with nalorphine.[5] We have had the opportunity to confirm the dramatic efficacy of nalorphine in another case of racemorphan intoxication. The unusual circumstances involved in this case permit the drawing of certain conclusions concerning the pharmacological activity of both racemorphan and nalorphine.

REPORT OF A CASE

A 54-year-old white woman entered the hospital in December, 1952, because of generalized carcinomatosis. Six months previously she had been treated for carcinoma of the uterus with radium implants and subsequent total hysterectomy. For a month prior to admission she had been bedridden and had complained of severe pain in the back and left hip, with "knife-like" radiation of pain down both legs. Physical examination on admission showed only severe muscular atrophy in both legs, which were held flexed and adducted, and a Gonda reflex on the left. Roentgenologic examination revealed a pathological fracture of the left femur, with bone changes suggestive of metastases in the inferior ramus of the right pubis. Since there was no papilledema, a lumbar puncture was performed, the results of which were within normal limits, except for an elevated spinal fluid pressure (340 mm. of cerebrospinal fluid). Results of routine hematological and urine analyses were within normal limits.

Five milligrams of racemorphan was given subcutaneously at 9 p. m. to control pain. Throughout the night the patient rested well but was slightly disoriented. Another lumbar puncture was done the following morning, which showed a pressure of 290 mm. of cerebrospinal fluid. At 1:30 p. m. on the second day, the patient again complained of hip and leg pain and was given another 5 mg. of racemorphan subcutaneously. She promptly went to sleep. Two hours later it was noted that she could not be aroused and had Biot respiration at a rate of nine per minute. She continued to be semicomatose for 10 hours. At 12:15 a. m., she responded only to painful stimuli. The left patellar reflex was diminished, but a Gonda reflex was present on the left. The eyes were immobile, and the pupils were greatly dilated and unresponsive to light; the corneal reflex was barely perceptible. Biot respiration continued at a rate of nine per minute, and the patient had periods of apnea lasting 15 seconds.

Five milligrams of nalorphine was given intramuscularly at 12:25 a. m. By 12:30 a. m., the depth of respiration had increased, and the periods of apnea were shortened to 10 seconds. At 12:40 a. m., respiration was regular and of normal amplitude, with a rate of 14 to 16 per minute. The patient opened her eyes at 1 a. m. and said spontaneously, "I'm waking up now." Fifteen minutes later respiration was regular at 18 per minute. The corneal reflex was present, and the pupils reacted sluggishly to light. The patient was alert and rational. Eighty minutes after the administration of nalorphine the patient complained of severe pain.

Results of liver and kidney function tests were as follows: serum alkaline phosphatase level, 13.2 units per 100 cc.; sulfobromophthalein (Bromsulphalein) sodium test, 45.6% retention after 45 minutes; nonprotein nitrogen level, 34 mg. per 100 cc. The urine had a specific gravity of 1.024 and contained neither protein nor reducing substances. A test for urinary urobilinogen (Watson qualitative method) was positive in 1:100 dilution.

Three days later 2.5 mg. of racemorphan administered subcutaneously caused the patient to become generally depressed; Biot respiration returned at a rate of 10 to 12 per minute, with 20 second periods of apnea. The administration of 2.5 mg. of nalorphine intramuscularly reduced the duration of apnea from 20 to 17 seconds and increased the depth of respiration. It also made the patient more alert and mindful of her pain. Subsequently, the patient's pain was adequately controlled without ill effects by administration occasionally of small doses (4 mg.) of morphine. The possibility that the hypodermic injections had a suggestive effect was ruled out by injections of sterile saline solution, which were totally ineffective.

COMMENT

Signs of severe narcotic poisoning (decreased respiratory rate and altered respiratory rhythm, depressed corneal reflexes, and fixed and dilated pupils) persisted in this patient for at least 12 hours after the administration of racemorphan (two doses of 5 mg. each given 15 hours apart). Such a prolonged and cumulative action is best explained as the result of a diminished rate of detoxification of racemorphan. The apparently normal kidney function and severe hepatic damage present in this patient suggest that the liver is the major site of detoxification of racemorphan, as it is for morphine.[6] Thus, racemorphan, like opium or its derivatives, should be used with caution in persons with diminished liver function. The degree to which probable brain damage and an elevated cerebrospinal fluid pressure enhanced the action of racemorphan is difficult to evaluate. Nevertheless, the results observed emphasize the need for caution in administration of narcotics to patients with increased intracranial pressure.

In the case reported, nalorphine promptly antagonized several effects of racemorphan. Respiratory depression was reversed within 15 minutes after the intramuscular injection of 5 mg. of nalorphine, as evidenced by an increased depth and rate of respiration and the conversion of respiration from Biot to normal regular rhythm. The analgesic and general depressant effects of racemorphan were also counteracted. Presumably, analgesia, respiratory depression, and dulling of consciousness are not manifestations of fundamentally different pharmacodynamic actions of racemorphan.

SUMMARY AND CONCLUSIONS

A patient with racemorphan (Dromoran) poisoning successfully treated with nalorphine (Nalline) is described. Of all the observed effects of racemorphan, antagonism to respiratory depression occurred most quickly. Racemorphan should be used with caution in patients with severe liver damage, since the liver is probably the major site of detoxification of this substance.

ADDENDUM

After this manuscript had been prepared for publication, Bornstein and co-workers [7] reported two more cases of successful treatment of racemorphan poisoning with nalorphine.

1853 W. Polk St. (12) (Dr. Domino).

5. Chase, H. F.; Boyd, R. S., and Andrews, P. M.: N-Allylnormorphine in Treatment of Dihydromorphinone and Methorphinan Overdosage, J. A. M. A. **150**: 1103-1104 (Nov. 15) 1952.

6. Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics: A Textbook of Pharmacology, Toxicology and Therapeutics for Physicians and Medical Students, New York, The Macmillan Company, 1941, p. 202.

7. Bornstein, M.; Yorburg, L., and Johnston, B.: N-Allylnormorphine in Treatment of Methorphinan (Dromoran®) Hydrobromide Poisoning, J. A. M. A. **151**: 908-910 (March 14) 1953.

Use of Radioisotopes.—There are about 10 radioisotopes which can be produced with sufficiently high specific activity not only to supplant radium but to challenge the pre-eminence of therapeutic x-ray equipment. Three of these isotopes, Cesium^{137}, Europium^{152}, and Cobalt^{60}, can be designed into machines which have many advantages over an electrical device of similar energy.—M. Brucer, M.D., Encouraging and Discouraging Research with Therapeutic Radioisotopes, *Journal of Kentucky State Medical Association*, June, 1953.

CYCLIC NEUTROPENIA

REPORT OF A CASE TREATED BY SPLENECTOMY

William D. Coventry, M.D., Duluth, Minn.

Cyclic neutropenia, or periodic neutropenia as Reimann [1] has recently termed it, is a rare hematological disorder of unknown etiology and is characterized by severe neutropenia or agranulocytosis recurring at approximately 21 day intervals. The neutropenic phase, which lasts for from five to eight days, is usually accompanied by mild fever and localized, superficial infections of the skin or mucous membranes. Sometimes the infection is so severe that it simulates acute agranulocytosis, while, at other times, infection may be minimal or even absent. These symptoms always subside as the neutrophils rise to normal levels during the recovery periods. This sequence of events continues for years without impairing the general health of the person. Accurate recognition of this type of neutropenia is of great importance because it implies a favorable prognosis and because the disorder must be differentiated from acute and chronic types of neutropenia, both idiopathic and secondary, in which a serious outcome may be expected.

Leale,[2] in 1910, first described this disorder in a 3½-year-old infant. In 1946, Vahlquist [3] reviewed the literature and described the disorder in one of his own patients, an infant. He suggested that the disease be considered an entity. This was also the opinion of Reimann,[1] who, in 1949, collected 16 cases from the literature and suggested that this entity be included in his group of periodic diseases. Recently both Sandella [4] and Monto [5] have described this disorder in an older person. The few deaths so far reported have been from unrelated causes. In order to elucidate further the clinical features of this rare and benign type of neutropenia, another case, treated by splenectomy, is described.

REPORT OF A CASE

A married girl, 16 years of age, was first seen in October, 1948, and remained under observation until October, 1952. In October, 1948, she was admitted to the dermatology service of the hospital because, for the preceding four days, she had had a severe furunculosis that involved the buttocks and groin and that was accompanied by fever and chills. Three weeks before she had delivered a normal male infant. No leukocyte counts were obtained at that time, but, during pregnancy, several blood cell counts had shown neutropenia. She recalled that during pregnancy she had not had any skin or mucous membrane infections but that before, for as long as she could remember, she had had repeated superficial infections of the skin and mouth.

Physical examination revealed a well-nourished and well-developed young girl who showed no abnormality except for mild gingivitis and several large furuncles of the buttocks and groin. Multiple scars from previous similar infections were also present on the buttocks. The temperature was 104 F. The hemoglobin level was 9.7 gm. per 100 cc.; erythrocytes, 3,400,000; and leukocytes, 3,850 per cubic millimeter, with 11% neutrophils, 2% eosinophils, 1% basophils, 26% monocytes, and 60% lymphocytes. The number of platelets appeared to be increased on the blood film. Urinalysis was normal. Blood cultures showed no growth. A chest film was normal. There was a strongly positive reaction to intradermal Staphylococcus toxoid in 1:100 solution. Treatment with Staphylococcus toxoid, transfusions, and antibiotics was followed by a prompt drop in temperature and rapid healing of all lesions. Three days after admission, the number of neutrophils had reached 38%, and, at the time of discharge from the hospital on the 11th day, there were 6,050 leukocytes, with 60% neutrophils, 1% eosinophils, no basophils, 35% lymphocytes, and 4% monocytes, a normal distribution.

Sternal marrow aspiration was performed after the blood cell values had returned to normal. The myelogram (cell type percentage in 400 nucleated cells) revealed myeloblasts, 1.25%; leukoblasts, 1%; promyelocytes, 1.25%; myelocytes (neutrophils), 8%; myelocytes (eosinophils), 0.75%; myelocytes (basophils), 0.5%; metamyelocytes, 15.75%; neutrophils, 25%; eosinophils, 3.5%; basophils, 2.25%; lymphocytes, 19%; monocytes, 5%; erythroblasts, 0.25%; normoblasts (basophils), 2.5%; and normoblasts, 16.75%. Megakaryocytes were not estimated. This was considered to be a normal marrow specimen and corresponds to the figures given by Fullerton and Duguid [6] for the remission phase.

The patient's medical history was obtained from her family physician. Records made at the time of her birth on April 25, 1932, showed that parturition was normal. No blood cell counts were obtained at that time. In March, 1933, when the patient was one year old, otitis media with mastoiditis, multiple furuncles, and anal fissure occurred. Mastoidectomy, adenoidectomy, and cauterization of the fissure were done with uncomplicated recovery. Neutropenia and anemia were first noted during this illness.

Between March, 1933, and October, 1948, the girl was hospitalized on many occasions for treatment of recurrent infections. Ulcerative stomatitis and gingivitis were first noted in August, 1933, and this condition recurred continually throughout her life; several dental extractions were done in an attempt to cure it. During this period, at one time or another, furuncles or abscesses involving the fingers, toes, axillas, buttocks, elbows, conjunctivas, and ears were present. These infections always healed without serious complications. Laboratory records showed that anemia, leukopenia, and neutropenia occurred at various times. No detailed serial blood studies were performed during this 15 year period. The girl's father, mother, and two siblings had always been in good health. None had a history of infections or neutropenia. The only history of allergy in the patient or her family was urticaria on one occasion following a penicillin injection. No time relationship existed between the menses and the phase of neutropenia. The patient was well adjusted to her illness and showed no neurotic tendencies.

She was admitted to the hospital again in February, 1949, because of a small ulcer on the left buccal mucosa and pyoderma on the right thumb of six days' duration. The temperature was 100.6 F. The hemoglobin level was 13.5 gm. per 100 cc.; erythrocytes, 4,100,000; and leukocytes, 5,300 per cubic millimeter, with neutrophils, 42%; eosinophils, 20%; basophils, 1%; lymphocytes, 31%; and monocytes, 6%. Findings on physical examination were normal except for the local lesions. The spleen was not palpable. There was no enlargement of lymph nodes. Recovery was rapid with antibiotic and local treatment. One week after the patient left the hospital, the leukocyte count was 5,600 per cubic millimeter, and the differential count was normal.

A third hospital admission was necessary in April, 1949, because of purulent gingivitis, with severe regional lymphad-

From the Department of Internal Medicine, the Duluth Clinic.

Drs. F. T. Becker, M. G. Fredricks, H. A. Sincock, and K. W. Teich assisted in obtaining data on the patient described.

1. Reimann, H., and de Berardinis, C. T.: Periodic (Cyclic) Neutropenia, an Entity: A Collection of 16 Cases, Blood **4**: 1109-1116 (Oct.) 1949.

2. Leale, M.: Recurrent Furunculosis in an Infant Showing an Unusual Blood Picture, J. A. M. A. **54**: 1854-1855 (June 4) 1910.

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enitis of five days' duration. The temperature was 102 F. The hemoglobin level was 11 gm. per 100 cc.; erythrocytes, 4,600,000; and leukocytes, 5,000 per cubic millimeter, with neutrophils, 10%, eosinophils, 5%, lymphocytes, 45%, and monocytes, 40%. Again clinical improvement was rapid. During the next 10 months, the patient experienced repeated mild episodes of bleeding gingivitis and single buccal ulcers. There was slight elevation of temperature during these episodes, but the girl was able to continue with her routine of life and no hospital treatment was necessary. Many leukocyte counts taken during this period ranged from 2,800 to 5,400 cells per cubic millimeter and averaged about 4,000. Sometimes neutrophils were absent for four or five successive days. On other occasions, the number of neutrophils reached 46%. Complete hematological studies revealed no other abnormality.

Reference to the recently published paper by Reimann and de Berardinis [1] in which the entity periodic (cyclic) neutropenia was described suggested this as the probable diagnosis. During March and April, 1950, therefore, serial leukocyte and differential counts were done as nearly at daily intervals as possible. The results of this survey in terms of total neutrophils per cubic millimeter are shown in the table. Neutropenia lasting 5 to 8 days recurred regularly, with a recovery interval of approximately 12 to 14 days between each phase. Each cycle, with its phase of recovery and agranulocytosis, totaled 18 to 21 days. The diagnosis of cyclic neutropenia was thus established.

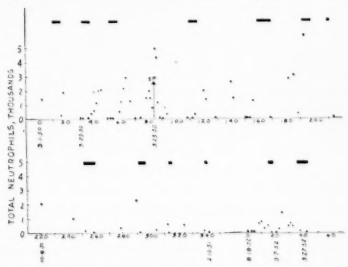
Treatment up to this time had consisted of good oral and skin hygiene for the prevention of infection, with the use of antibiotics when these episodes became severer. In view of the cases reported by Doan [7] and Fullerton and Duguid,[6] in which splenectomy was followed by relief of symptoms, it was decided that this procedure offered the patient the greatest hope for permanent improvement. On May 23, 1950, during a period of remission, splenectomy was performed. The postoperative course was uneventful, and the patient was discharged on the ninth hospital day. The pathologist's report stated that the specimen consisted of a spleen weighing 280 gm. The capsule was somewhat tense, and, on cut section, the tissue had a markedly congested and suggestive beefy-like appearance. There was no evidence of infarction, and the follicles were not at all prominent on gross examination. The pedicle was not unusual. On microscopic examination there was grade 2 neutrophilic infiltration of the splenic sinuses that was not accompanied by the usual congestion of sinuses found in toxic splenitis of the same grade. No unusual phagocytosis of these neutrophils was found. There was no unusual abnormality. The findings were consistent with the diagnosis of periodic neutropenia.

The immediate response to splenectomy by the leukocytes was a sharp rise in the number of white blood cells to a maximum level of 16,000 per cubic millimeter, with 87% neutrophils. By the third postoperative day, however, a reversion to previous levels had begun, and, subsequently, the next regular 21 day exacerbation of neutropenia occurred with the usual attendant gingivitis. For the next nine months, the patient was observed frequently, and cycles of neutropenia similar in degree to those noted before splenectomy recurred at the usual intervals. In the remission phase, however, the neutrophils often reached heights exceeding the presplenectomy levels. This was in part due to a permanent postsplenectomy rise in the average total leukocyte count (see figure). In spite of this, however, periodic infections continued to recur as the cycles of agranulocytosis continued unabated. In September, 1952, two years and four months after splenectomy, a survey of the neutropenic cycle was again made, and it was found to recur at precisely the same interval as before splenectomy (see figure).

Infections of moderate severity recurred regularly during the nine month period from May, 1950, to February, 1951, and hospitalization was necessary on one occasion. Several neutropenic periods were asymptomatic. A second pregnancy occurred in May, 1951, and, in July, the patient was admitted to the hospital during a neutropenic phase, with pyelitis of pregnancy. Recovery was rapid as usual. Except for this incident, there was no infection during the second pregnancy. A normal parturition took place in December, 1951, during a neutropenic phase and was without complication or infection of any kind. The infant was a healthy male. Four consecutive leukocyte counts done on the infant at the age of two months, over a period of 20 days, showed an average of 9,500 white blood cells per cubic millimeter, with neutrophils, 33%; eosinophils, 3%; lymphocytes, 60%; and monocytes, 14%, a normal differential count for an infant of this age. The first postpartum cycle of neutropenia in the mother was again accompanied by severe furunculosis, this time of the vulva. During the next nine months, there was no periodic infection; however, when last observed, in October, 1952, two recent successive cycles had been accompanied by moderate gingivitis with lymphadenitis and severe pharyngitis, respectively. Several severer attacks have occurred subsequently.

COMMENT

The cause of this rare disorder of the neutrophils is obscure. A congenital etiology is suggested by the 19 cases,[8] including the present one, reported in the literature in which about half had a definite history of onset in infancy. Regardless of the time of onset, however, the diagnosis may be made at any age. Two recent cases have been described in persons 64 [4] and 78 [5] years of age. Hereditary factors have not been adequately studied. In



Periods of neutropenia, infection (rectangles), and total leukocyte counts in patient before and after splenectomy (*SP*).

the case herein reported, they appear to be ruled out by the absence of neutropenia in both parents, siblings, and one child.

The mechanism by which the neutrophils periodically disappear from the blood remains equally obscure. By repeated marrow aspirations, Fullerton and Duguid [6] found that, in the neutropenic phase, not only neutrophils are reduced but also myelocytes and myeloblasts; thus, the entire myelocytic series is depressed. These authors conclude that the process is not a maturation defect or arrest. Sandella,[4] on the other hand, on the basis of multiple marrow aspirations, believes that depression and maturation arrest at the promyelocytic-myelocytic level are present during the neutropenic phase. Kline,[9] who has recently studied the life span of leukocytes, is unable to explain the sudden fall in the number of neutrophils by a cessation of cell production. He suggests excessive destruction of these cells as a more likely explanation. Periodic sequestration of the neutrophils also must

7. Doan, C. A.: Personal communication to the author.
8. Footnotes 1, 4, and 5.
9. Kline, D. L., and Cliffton, E. E.: Measurements of Life-Span of White Blood Cells with Radioactive Phoshorus, Fed. Proc. **11**: 84 (March, pt. 1) 1952. Personal communication to the author.

be considered. The epinephrine test was done on this patient in periods of both remission and exacerbation in order to evaluate this possibility, but, in each instance, although a definite leukocytosis resulted, there was no increase in the absolute number of neutrophils.

Treatment with various hematinic drugs, hormones, antibiotics, vitamins, antiallergic drugs, and vaccines has so far failed to alter the cyclic changes in the neutrophils. Recently Monto and associates [5] described the use of corticotropin (ACTH) during the neutropenic phase. Seventy-two hours after this therapy was begun, the leukocyte count increased from 600, with almost complete agranulocytosis, to 1,650 per cubic millimeter, with 67% neutrophils and coincident clinical improvement. Reimann, however, after administering a single test dose of 25 mg. of adrenocorticotrophic hormone during an episode of neutropenia, noted a fall in total number of leukocytes from 4,000 to 2,000 per cubic millimeter and a further decrease in the number of neutrophils. In view of these conflicting results, it would appear that corticotropin should be tried in consecutive cycles of neutropenia before conclusions as to its value are reached. The effect of any treatment given during a single neutropenic cycle must be evaluated with regard to the spontaneous increase in neutrophils that always follows.

Splenectomy for the treatment of cyclic neutropenia appears to have first been performed in Doan's case.[7] His patient had both congenital hemolytic icterus and cyclic neutropenia. After removal of the spleen, the anemia was completely relieved, as expected; but in addition, the leukocyte count was raised from a low of 1,000 or less per cubic millimeter in the neutropenic phase to a level of 5,000. This permitted the patient to carry on her work in reasonably good health after many years of disability from recurrent infections. The regular cycles of neutropenia were unaffected. Up to the present, eight cases [10] similarly treated have been reported in the literature, including this case. In four of these,[11] substantial to complete relief from periodic infections resulted. Significantly, in each instance, the spleen was considerably enlarged: three to four times normal size, 500 gm., 670 gm., and 520 gm., respectively. The corresponding ages of these patients were 62, 18, 64, and 78 years. The remainder, including this case, continued to have periodic infections of a degree that indicated doubtful or no benefit from splenectomy. In this group, the spleen was normal or only slightly increased in size: 165 gm., 17 by 10.5 cm., 160 gm., and, in this case, 280 gm. The corresponding ages were 18, 23, 24, and 18 years, respectively. From this it appears that (1) splenectomy will be beneficial if the spleen is considerably enlarged, especially in an elderly patient, and (2) improvement should not be expected in young patients with a normal or slightly enlarged spleen. All patients have survived the operation without complications. Owen's patient died one year later from pneumonia. In Sandella's patient, death from lymphosarcoma occurred 16 months after splenectomy.

10. Reznikoff, P.: Cyclical Neutropenia: A Case Study with Bone Marrow Findings Before and After Splenectomy, Tr. A. Am. Physicians **59**: 276-281, 1946. Owen P. A.: Cyclic Agranulocytosis, Acta med. scandinav. **134**: 87-97, 1949. Löffler, W., and Maier, C.: Über einen Fall von Feltyschem Syndrom mit cyclischer Agranulocytose, Cardiologia **12**: 195-210, 1947-48. Footnotes 4, 5, 6, 7, and 9.

11. Footnotes 4 through 7.

My patient has now been observed for two and a half years since splenectomy. During the first half of this period, the infections continued at regular intervals and their severity was unchanged. During pregnancy, infections were absent. During 1952, there were no significant infections for a period of nine months, but, during the remaining months, several severe attacks have occurred. Good hygiene and the early use of antibiotics have been helpful in controlling the episodes. Splenectomy may have had some palliative influence on the severity of the infections, yet incapacitating attacks have continued to occur in spite of the operation.

As to effects on the blood, removal of the spleen in the case described did not change the degree or periodicity of the neutropenic cycle, but it was followed by a rise in the average total leukocyte count (see table). Prior to the operation in May, 1950, the average of 30 leukocyte counts done in both phases over a two month period was 3,960 per cubic millimeter. In the early postoperative period of June to November, 1950, a similar average was 5,980. Two years later, in August and September, 1952, the average was 6,220. Similar effects have been noted by Monto, Doan, and Löffler. The increase in average number of leukocytes, without improvement in the degree of periodic neutropenia, was evidently not sufficient to raise the resistance to infections to a point at which they were eliminated. The complete relief of symptoms during two pregnancies is noteworthy, although no explanation is available. It is unfortunate that consecutive blood cell counts were not obtained during these periods.

Total Leukocyte Counts in Patient with Cyclic Neutropenia

Before Splenectomy		After Splenectomy		After Splenectomy	
Day	Total Count	Day	Total Count	Day	Total Count
March 29, 1950	3,750	May 30, 1950	6,300	Aug. 18, 1952	5,800
30	3,300	31	9,250	21	5,200
31	4,000	June 8	6,750	23	5,100
April 1	3,650	15	5,500	26	5,900
3	3,000	16	4,500	28	6,100
4	3,700	17	5,200	30	6,200
5	3,900	19	6,700	Sept. 2	6,450
6	3,600	20	9,950	4	5,400
8	3,300	22	6,450	8	6,950
10	4,200	28	5,600	10	6,400
11	4,850	30	4,400	12	6,500
12	5,450	July 6	5,150	16	5,900
13	5,400	11	6,850	18	6,900
14	5,250	18	7,250	20	5,700
15	4,800	19	6,800	24	5,400
18	3,400	27	5,700	30	7,300
19	2,200	29	6,000	Oct. 6	8,000
20	3,100	Aug. 2	3,700		
21	3,650	5	5,350		
22	2,900	16	4,200		
25	3,850	30	5,800		
26	3,850	Sept. 5	7,000		
27	3,850	7	4,050		
28	4,300	12	5,850		
29	4,600	Oct. 2	5,500		
May 1	4,250	9	6,500		
2	4,450	Nov. 1	5,350		
3	4,600	4	4,950		
4	4,300	10	5,500		
5	3,450	13	7,350		
Average	3,903	Average	5,952	Average	6,223

Accurate diagnosis of this entity is important, for the disorder must be differentiated from acute and chronic neutropenia. Only by doing serial differential blood cell

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counts can this be accomplished. Other important diagnostic features are (1) a history of recurrent infections of the skin or mucous membranes over a period of years, possibly from infancy, (2) the presence of recurring cycles of neutropenia or agranulocytosis coinciding with these episodes, and (3) the sustained good general health of the person. Once the diagnosis is made, wise management of the patient can greatly ameliorate the economic consequences of a life-long periodic illness.

SUMMARY AND CONCLUSIONS

Cyclic neutropenia in a 16-year-old girl observed over a four year period is described. Splenectomy was not followed by relief from periodic infections. No effect on the regularity of the cycles or on the degree of neutropenia resulted; however, the total leukocyte count increased from an average of 3,960 before splenectomy to an average of 6,220 per cubic millimeter two and a half years later. Spontaneous relief from infections occurred during two pregnancies.

A review of eight cases collected from the literature shows that splenectomy will most likely be beneficial in the elderly patient with considerable splenomegaly. Little or no benefit may be expected if the patient is under 25 years of age and if the spleen is normal or slightly enlarged.

205 W. Second St.

VACCINIA OF THE EYELIDS

TREATMENT BY AUREOMYCIN IN A SECOND CASE

Col. John H. King Jr.
and
Major Robert L. Forrest, (MC), U. S. Army
Washington, D. C.

Vaccinia of the eyelids, although not a rare condition, is uncommon and may cause serious ocular complications. Contact infection from others with vaccinia is probably commoner than autoinoculation.[1] In about one-third of the cases, the cornea becomes involved,[2] and vaccinial diskiform keratitis and necrosis may result in loss of the eye. Untreated vaccinia usually runs a course of 28 to 31 days. Crusting may appear after the 12th day, followed by a varying period of ulceration. When large areas of the lid margins are involved, thickening may persist for several months and gradually disappear or may be followed by permanent distortion or symblepharon.[3] The infection may spread to the other eye, and necrosis may follow secondary infection.[1]

Treatment in the past has been concerned chiefly with the symptoms, maintenance of sanitary conditions, and application of various antiseptic solutions locally. Atkinson and Scullard [2] advised therapeutic measures aimed specifically against the vaccinia virus. These appeared valuable in experiments with animals but had not been applied to human beings. Potassium permanganate applied locally and ascorbic acid given orally were recommended because it was thought that their oxidizing properties might inactivate the virus.

One of us (J. H. K.)[4] treated a 2-year-old patient who had severe, primary vaccinia of the eye with aureomycin supplemented by several of the measures mentioned above. The cure was dramatic and rapid; the lesions improved in 24 hours and disappeared completely in 4 days. It was felt that aureomycin exerted a definite rapid antiviral action in this case. Atkinson,[5] using the same antibiotic, obtained a good response in a patient with vaccinia of the eyelids complicated by early corneal involvement. Sichi [6] also used aureomycin, by mouth only, for the rapid cure of a case of severe vaccinia of the conjunctiva.

Fig. 1.—Vaccinia of the eye with facial edema.

REPORT OF A CASE

Ten days before admission to the hospital, a 6-year-old white girl was vaccinated on the left upper arm. A lesion typical of vaccinia developed. Six days after the vaccination, the child's mother noticed a slight redness and swelling of the right eyelids. During the next four days, ulcerated areas developed on the medial aspect of the right upper lid, with marked edema and redness. The lids swelled shut, and ulcers developed on the skin of the lower lid coming in contact with the lesions of the upper lid. Two days after the onset, the patient was taken to a physician and was given a dose of 600,000 units of penicillin intramuscularly. Streptomycin ointment was applied locally four times daily. Two days of this treatment failed to alter the progress of the lesions.

When the patient was admitted to the hospital, the right eyelids and adjacent skin were so swollen that the globe could be observed only by forcing open the lids (fig. 1). There were four ulcerated lesions of the lids; the two on the upper lid were held in contact with the two on the lower lid by the edema (fig. 2). The surfaces of the ulcers were covered with yellowish-white membranes. The cornea and conjunctiva were normal. There was also a vaccinia lesion on the left upper arm. Except for a temperature of 101.2 F, there were no other physical signs. A portion of membrane from one eyelid lesion and one from the lesion on the left upper arm were

From the Ophthalmology Service, Walter Reed Army Hospital.

1. Duke-Elder, S.: Textbook of Ophthalmology, vol. 5, The Ocular Adnexa, St. Louis, C. V. Mosby Co., 1952, pp. 4882-4883.
2. Atkinson, W. S., and Scullard, G.: Vaccinia with Ocular Involvement, Arch. Ophth. **23**: 584-585, 1940.
3. Bedell, A. J.: Multiple Vaccination of the Eyelids, Am. J. Ophth. **3**: 103, 1920.
4. King, J. H., and Robie, W. A.: Primary Vaccinia of the Eyelids: Treatment by Aureomycin, Am. J. Ophth. **34**: 339-341, 1951.
5. Atkinson, W. S.: Personal communication to the authors, 1951.
6. Sichi, W.: Personal communication to the authors, 1952.

sent to the virus laboratory to be cultured separately. A blood specimen was also taken to determine the patient's immunity to vaccinia.

The following therapy was instituted: aureomycin, 250 mg. every eight hours, was given by mouth for a total of 120 hours. Aureomycin (5.0 mg. per cubic centimeter) borate solution was used to flush the right eye and eyelids every four hours while the patient was awake, for five days. Potassium permanganate (1:100,000 solution made fresh daily) was applied by wet compresses four times daily for five days. Ascorbic acid, 50 mg. twice daily by mouth, was administered for five days.

Twenty-four hours after the treatment was instituted, the edema of the lids had receded, and the child was able to open the right eye. Temperature had returned to normal. In 48 hours the swelling had almost completely disappeared; the ulcerated areas of the lids had begun to heal; and eschars had formed. After 72 hours, all the ulcerations except one had healed, and the edema and inflammation had disappeared. At 96 hours the ulcers had healed completely, and only small indurated areas marked the location of the lesions. The patient was released from the hospital in five days, and aureomycin borate solution was used in the right eye for an additional four days.

Fig. 2.—Ulcerated lesions in vaccinia of the eye.

The virus cultures taken from the lesions on arm and eyelids at the time of admission showed the same strain of virus. The blood specimen taken at the time of admission, as well as that taken two weeks later, revealed a rising titer of antibodies to vaccinia virus. The child was examined two weeks after discharge from the hospital, and no evidence of scarring of the lids was present.

SUMMARY AND CONCLUSIONS

Vaccinia of the eyelids, although uncommon, is a serious condition with complications that may cause the loss of vision. Severe vaccina of the eyelids in a 6-year-old girl that responded rapidly to aureomycin locally and orally is described. The etiology was proved by cultures and animal inoculation. In a previously reported case,[8] dramatic response was obtained by the same treatment, but with the addition of penicillin. In the present case, penicillin had been previously administered without results. In our knowledge, two other patients with vaccinia involving the eyes, one with corneal complications, also responded well to treatment with aureomycin. The early use of aureomycin, administered orally and locally, is recommended for the treatment of ocular vaccinia.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

REPORT OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following article.

RALPH E. DE FOREST, M.D., *Secretary.*

CALCULATORS FOR APPLYING THE OGINO-KNAUS THEORY

The following statement is deemed necessary in order to counteract the misleading impact of some, though by no means all, of the advertising of devices sold to the public in connection with the so-called rhythm method of birth control. A considerable number of such devices for applying the Ogino-Knaus theory have been sold. The Council on Physical Medicine and Rehabilitation is charged with the responsibility of examining contraceptive devices that come into direct contact with the human body, and in its consideration of such devices has had the very helpful cooperation of an Advisory Committee on Sterility and Fertility. The various types of calculators, slide rules, and tables sold to the public for use in applying the rhythm method are not strictly within the purview of the Council because they are not directly applied to the human body. Nevertheless the Council has become concerned because the advertising literature that has been used to promote the sale of some of these devices in some instances has been quite misleading, while in other instances manufacturers have earnestly requested an opinion as to what could properly be claimed for such devices.

Eleven such devices, which have been studied in preparation of this report, will be described briefly for purposes of illustration.

1. A set of ovulation timetables is distributed mainly to physicians by a manufacturer of pharmaceuticals. The tables are printed on cards, with a system of pointers and several explanatory folders and sheets, and are intended to apply to patients whose cycles are 21, 24, 26, 28, or 30 days.

2. Another device consists of two aluminum disks between which a printed celluloid disk rotates. The device is enclosed in a purse-like leather case along with some printed matter addressed to the physician and claiming the approval of a distinguished clinician.

3. A cardboard box is equipped with a calendar in the form of a slender paper strip that slides through an arrangement of slots and tabs. A certain amount of information is printed on the box. No unreasonable claims are made, and the patient is advised, "In case of doubt, consult your physician or do not use the method at all."

4. A 16 page booklet has a pocket containing an arrangement of celluloid disks with a pointer. The textual material in the booklet is conservatively worded.

5. A similar 72 page leather-covered book has a pocket containing a similar calculating device. This consists of five laminas of celluloid bearing printed information and fastened together. The information in the book is carefully written and largely factual; it includes many quotations from ecclesiastical authorities and gives references to scientific publications.

6. Three cardboard disks so fastened together that they can be rotated are accompanied by a wealth of printed matter that seems to be carefully written.

7. A plastic device offered by a foreign manufacturer contains a roller that can be rotated. By appropriate settings of various graduated scales, one can read the days assumed to be fertile or sterile.

8. A circular cardboard disk, advertised as being "scientific," is embellished with a seductive figure of a woman and marked with card-players' symbols for heart, diamond, spade, and club. The disk rotates on a cardboard square on which a

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circle is laid off into 365 divisions to represent the days of the year.

9. A device resembling a slide rule is described by the promoter as a "new automatic device that forecasts the days of the month when pregnancy is possible and impossible . . . based upon the discovery . . . that women can become pregnant only two days a month and that these days can be determined accurately in advance . . . the most fool-proof method of spacing birth known to medical science. Dr. ——, M.D., writing in the *American Medical Association Journal* reports not a single pregnancy in almost 16,000 cases where the system was used. . . . More dependable than any mechanical contraceptive, the System is sanctioned by all churches, is legal, and is preferred for psychological and moral reasons."

10. Another device consists of a slotted cardboard box with a roll of paper inside. The paper strip has the days of the year printed on it and is drawn out through the slot in such a way as to pass under an adjustable piece of cardboard bearing the words "sterile" and "fertile." By adjusting this piece and pulling the paper strip out of the box the user can make the intended calculation.

11. Probably the neatest and easiest to use of the devices examined is a 212 page book resembling a collection of logarithm tables. A woman who has observed her own menstrual cycles long enough to be able to state a maximum and a minimum length of cycle (for example, 33 days maximum and 24 days minimum during a given period of observation) finds two pages of explicit tables listing the "baby days" following any one of the possible 365 days on which the previous menstruation began. While the tables must be commended as a clear and accurate presentation of the results of calculations based on certain assumptions, the accompanying text does not accurately reflect the current opinion of either medical or ecclesiastical authorities. The following passages are examples: "Full recognition of the . . . Rhythm Method is evidenced by the medically authoritative *Journal of the American Medical Association* which stated 'Enough evidence has already been established to indicate that a strict observance of the method . . . is insurance of sterility even beyond that associated with the employment of most of the contraceptive apparatus and medicaments.' . . . All churches have accepted the Rhythm Method because it follows natural, biological control. . . . Artificial contraception does violate religious, legal and ethical principles."

In connection with the aforementioned items it seems desirable that the following statements be made, however self-evident they may seem to the regular readers of THE JOURNAL:

1. There is no scientific objection to tables, slide rules, or nomograms giving the results of calculations of "baby days" and "sterile days" if the assumptions underlying the calculations are explicitly and clearly stated, if the element of probability (as contrasted with certainty) is duly emphasized, and if the accompanying text is free from misleading or exaggerated statements.

2. It is important that the rules of semantics be obeyed in explanatory or apologetic material accompanying such devices and, in particular, that the words always, usually, sometimes, rarely, never, all, most, many, some, few, and none be used with care. The ethical or religious opinions of any one authority should not be given as representing all systems of philosophy or all religious groups, and the statement of any single investigator or editor should not be treated as if it were the unanimous verdict of a large professional group.

3. Semantically treacherous expressions like "natural," "artificial," and "nature's method" should be avoided, especially when irrelevant.

4. The following limitations of the rhythm method should be admitted: (*a*) It presupposes long periods of abstinence in addition to the briefer periods related to each menstrual cycle. (*b*) It makes no provisions for men, such as soldiers, whose occupation keeps them away from home except for brief and irregular periods of leave. (*c*) It "can be depended upon only by the normal, healthy woman and only under normal accustomed conditions." An appreciable number of patients without physically evident abnormality experience cycles shorter than 20 days or longer than 40 days, and the method is more and more unsuitable the greater the deviation from the assumed regularity. (*d*) It involves backward calculation from an anticipated event; the hazards of this process should be appreciated by whoever chooses it.

5. Despite the conviction, explicitly stated and tenaciously held by some authorities, that ovulation in women occurs on the 15th day before menstruation, other investigators continue to report evidence that the figure varies. Occasional intervals as short as nine or eight days have been indicated by a study of temperature charts. This uncertainty leads to the conclusion either that the number of "safe" days must be further curtailed or that the rhythm method must be supplemented by additional contraceptive precautions when pregnancy is strongly contraindicated.

6. It should be noted in connection with all these devices that they cannot do any more than an intelligent person can accomplish with paper and pencil, a calendar, and the necessary facts of observation and that they have a positive usefulness in increasing the probability of desired pregnancy in addition to the negative usefulness in contraception.

The foregoing statements are made necessary by repeated, sometimes misleading, references to the American Medical Association in the advertising of calculators for applying the Ogino-Knaus theory and are intended to apply only to the scientific aspects of the subject.

APPARATUS ACCEPTED

The following additional product has been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

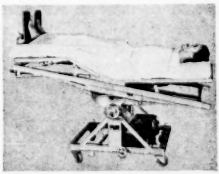
RALPH E. DE FOREST, M.D., *Secretary.*

Emerson Rocking Bed, Standard Hospital Model.

J. H. Emerson Company, 22 Cottage Park Ave., Cambridge 40, Mass.

The Emerson Rocking Bed is an apparatus designed to aid the respiration of patients with poliomyelitis during the transition from dependence on the tank type of respirator to independence. The rocking bed may provide necessary breathing aid for patients with partial but not extreme paralysis of the breathing muscles. The rocking bed is not intended to be substituted for the tank type respirator.

The apparatus measures 120 (high) by 200 by 92 cm. (4 by 6½ by 3 ft.) and weighs 227 kg. (500 lb.). Crated for shipment it measures 244 by 137 by 122 cm. (8 by 4½ by 4 ft.) and weighs 250 kg. (550 lb.). It operates on a standard light circuit and draws 782 watts. The motor requires 115 volt alternating current at 60 cycles, unless otherwise specified.



Emerson Rocking Bed, Standard Hospital Model.

When the bed is in operation, it oscillates about a fulcrum that is 16 to 18 cm. (7 to 8 in.) below the level of the patient's body, producing a to-and-fro motion. At the same time the longitudinal axis of the patient's body tilts +30 to −30 degrees about the horizontal and makes a total oscillation of 60 degrees. The speed is adjustable to conform with the patient's normal breathing rate, that is, from 15 to 26 oscillations per minute.

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ARMED FORCES FACED WITH SURPLUS OF MEDICAL OFFICERS

A series of events have taken place within the past two months that has drastically changed the military medical manpower picture. These changes and the current situation are herein outlined in detail so that physicians may know what their probable military status will be during the next few months.

As recently as July 1 of this year it was the stated opinion of officials of the Department of Defense that the requirements of the Army for medical officers could not be met without recourse to a medical draft call by the Selective Service System. A request for 524 physicians was officially made by the Secretary of Defense to the Director of the Selective Service System, who acted immediately to effect the call-up of these physicians through state and local Selective Service agencies. Shortly thereafter a flood of applications for reserve commissions and active duty orders was received from physicians primarily in priorities 1 and 2 who had previously been temporarily deferred for reasons of essentiality and to complete internship and residency training. These volunteers now exceed 1,200, a number far in excess of the present medical requirements of all of the branches of the armed forces combined.

The termination of hostilities in Korea, a decision on the part of certain medical officers to extend their current tour of military duty until 24 months of service is completed, and the reduction in the ratio of physicians to troop strength ordered by the Secretary of Defense all served to increase the surplus. Notwithstanding this excess of medical officers, the Selective Service System refused to cancel its pending draft call, which forced 524 additional doctors to accept reserve commissions and apply for immediate active duty or be drafted as privates by August 28.

The Army has announced that no more applications for commissions will be accepted after September 1 and is frantically urging its excess reservists to delay their requests for active duty for as much as one year. Even those who are insisting that they be called immediately cannot be placed in training classes until November or December at the earliest. It appears to be certain not only that the current draft call was unnecessary but that there will be no more such calls for many, many months to come.

It is apparent that as a result of this situation many physicians and local communities will be seriously inconvenienced. Acting in good faith and on the basis of the assertions by officials in Washington that medical personnel was sorely needed, many of these men have closed their offices or have discontinued their plans for additional residency or postgraduate training. In many instances this discontinuance of training was forced on them because of the prohibition that prevented hospitals from accepting priority 1 and 2 men to fill available residency vacancies.

Having terminated their civilian commitments on the assumption that they were needed immediately by the armed forces, these physicians are now faced with the prospect of an indefinite status for the next year or more. Possibly it is still not too late for many of them to change their plans, to request a delay in call to active duty, and resume their civilian occupations.

The alternative to a delay in the issuance of active duty orders to these men is the immediate call-up of an excessive number of medical officers. The disastrous long-range effects of this action would be: a wastage of medical manpower that would result in a reduction in the number of physicians available to care for the civilian population; a tendency to use excess medical officers on nonmilitary assignments; a squandering of available medical registrants under the "Doctor-Draft" law, which would accelerate the call-up of doctors in priorities 3 and 4; an inefficient utilization of physicians in uniform, with a resulting lowering of morale and general dissatisfaction with military service; and a nullification of the newly established ratio of 3 per 1,000 between medical and over-all troop strength, a goal that has been extremely difficult to attain.

The government officials charged with the administration of the "Doctor-Draft" law are obligated to call to active duty only those physicians who are needed and immediately to advise medical reservists as well as Selective Service medical registrants when they can expect to be called for military service.

FARM ACCIDENTS

One of the most hazardous of all occupations today is farming. In 1952, 62 out of every 100,000 farm residents lost their lives as a result of some sort of farm accident. An additional 1,200,000 farm residents suffered injuries. Most such accidents were preventable, and usually only one person was to blame—the person involved in the accident.

Farming has the third highest death rate among the major industries in the nation, surpassed only by the mining and other extractive and construction industries, it was reported in the current "Accident Facts" published yearly by the National Safety Council. Motor vehicle accidents among farm residents accounted for 6,000 deaths and 210,000 injuries, home accidents for 3,500 deaths and 540,000 injuries, occupational accidents for 3,800 deaths and 320,000 injuries and public non-motor-vehicle accidents such as streetcar or sidewalk mishaps for 1,300 deaths and 150,000 injuries.

Increasing use of machinery on farms may be a causative factor in the high death rate. There were about 700 fatal and about 25,000 nonfatal accidents involving farm wheel tractors in 1952. Fifty-five per cent of these deaths

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resulted from overturned tractors, and 16% were the result of falls from the vehicle. In 8% the victim was run over by the tractor, and in 5% he was crushed between the tractor and another object. Three per cent of such deaths resulted from entanglement, and 13% from other and unspecified causes.

Farming is one of the few occupations in which children are permitted to be close to operating machinery. It is no wonder, then, that one-third of the 306 fatal tractor accidents reported by Wisconsin and Ohio to the National Safety Council over a period of several years involved persons under 20 years of age. One case in 10 involved a child under 5 years of age. Deaths among the very young often resulted from falls that occurred while the children were riding on tractors.

One-third of the tractor fatalities in Minnesota and Iowa during 1949-1951, as reported to the National Safety Council, occurred in highway accidents. Considering the small proportion of time that tractors are on the highways, the accident rate during this use is probably much higher than the rate during use on the farm.

On the basis of corn harvest accidents in Iowa during 1952, it has been estimated that doctor and hospital costs per accident average $160, while the time lost averaged 30 days.

Farmers must be as accident conscious as their city friends. Since carelessness is responsible for most farm mishaps, they must realize that caution is synonymous with common sense. Such advice from a physician offers just as much preventive medicine as a vaccination against smallpox or the purification of drinking water.

Most physicians are close to their patients and take a personal interest in their welfare. This relationship is even more pronounced in the rural areas, where the physician and the farm resident usually share more than a patient-physician affinity. Therefore, the rural physician is in an ideal position to proffer advice that may prevent farm accidents. Every rural physician should volunteer safety facts and fallacies. It may be too late when the information is sought.

DENTAL FOREIGN BODIES IN THE LUNG AND ESOPHAGUS

Dental foreign bodies that have found their way into either the lung or the esophagus constitute a relatively small but important part of endoscopic practice. According to Hagens,[1] there are three main sources from which these cases originate. In the first group, a tooth or portion of a tooth, an inlay or filling, tartar, a piece of plaster impression, or a broken part of an instrument may slip from the grasp of the dentist and be aspirated or swallowed before the material is recovered. A second source of dental foreign bodies is supplied by patients who permit their teeth and dentures to fall into a deplorable state of disrepair. During the act of eating or swallowing, for example, a portion of the denture is broken, swallowed, and lodged in the esophagus, an event requiring endoscopic intervention. In the last group, teeth are loosened and sometimes lost as the result of manipulation of mouth gags and instruments during surgery in which a general anesthetic is used; this occurs especially in children undergoing tonsillectomy and adenoidectomy.

In general, patients should be carefully examined just as soon as it has been established that a dental foreign body has been swallowed. Roentgenograms are most helpful, not only in demonstrating the presence and site of the foreign body itself but also in displaying the reaction of tissues surrounding the object. When barium is used in the esophagus, it may stop at the level of the foreign body and, in some instances, cling to part of it. A tooth lodged in the bronchus of a child frequently produces high fever and a persistent cough, as well as other signs and symptoms pointing to the presence of a foreign body in the lung. Hagens asserts that in the case of two patients gold inlays slipped from the dentist's grasp; in one patient, a tooth was aspirated during the process of extraction; in another patient, a piece of dental plaster was aspirated; in two patients, dentures loosened during the act of swallowing; and, finally, in two patients, there was loss of a tooth during surgery of the throat.

1. Hagens, E. W.: Dental Foreign Bodies of the Lung and Esophagus, Quart. Bull. Northwestern Univ. M. School 27: 123, 1953.

WILLIAM VOLKER FUND

The establishment of the William Volker Fund extends the grants-in-aid program of the Committee on Research of the Council on Pharmacy and Chemistry into the basic medical sciences. When first organized as the Therapeutic Trials Committee, and up to the present, its fundamental objectives were to stimulate progress in the control and treatment of disease through facilitating investigations to establish the usefulness of diagnostic, preventive, and therapeutic agents.

The Board of Trustees of the American Medical Association in accepting a block grant from the William Volker Charities for administration by the Committee on Research also created an important precedent. Their decision establishes a pattern that may be followed by other large philanthropic organizations that desire to make contributions to the health field. By this mechanism grantors are guaranteed an impartial board of medical review by outstanding scientists well prepared to evaluate the proposed experiments. The entire grant will be spent on medical research, since the costs of customary overhead are borne by the American Medical Association.

The William Volker Fund is not specifically restricted to grants in special fields such as heart disease, cancer, or hypertension. The Committee on Research feels that this is commendable, since the progress of medical research requires broad investigations in all fields of medical endeavor, including the basic sciences. This approach should furnish better understanding of the normal cell and organ functions than can be secured by research directed primarily to departures from the normal processes.

Grants from the fund will be made to individual applicants and will be limited to the range of $500 to $1,000. The funds may be applied to defray expenses attendant to research, with the exception of salaries, services, and travel. Applications may be secured by addressing Dr. E. M. K. Geiling, Chairman, Subcommittee on Grants-in-Aid, Committee on Research, Council on Pharmacy and Chemistry, American Medical Association.

MEDICAL NEWS

ALABAMA

Narcotic Violation.—Dr. William J. Craig, Florence, Ala., pleaded *nolo contendere* in the United States District Court at Huntsville to a charge of violating the federal narcotic law, and on April 7 was placed on probation for three years.—— On June 4, Dr. Horace Greeley Franklin, Thorsby, pleaded guilty in the U. S. District court of Montgomery to violation of the federal narcotic law and was sentenced to a term of 15 months.

Dr. Whetstone Day in Sylacauga.—By official proclamation, Aug. 2 was declared "Dr. Whetstone Day" in Sylacauga in honor of Dr. Adair K. Whetstone. The proclamation stated, in part, that Dr. Whetstone had "performed outstanding medical service and (had) constantly rendered his professional services without thought of personal reward and . . . (had) been an outstanding citizen and (had) reared and educated eight daughters and two sons who also are honorable citizens and who have made fine contributions to this community. . . ." Churches throughout the city paid tribute to Dr. Whetstone at their morning services, and at First Methodist Church, where Dr. Whetstone has served as steward for 51 years, three scholarships in his name were awarded to the Sylacauga Hospital School of Nursing. Dr. James S. McLester, Birmingham, presented the scholarships. Dr. James O. Morgan, Gadsden, president of the Medical Association of the State of Alabama, was speaker at the afternoon program at Noble Park.

CALIFORNIA

Dr. Cutting Named Acting Dean.—Dr. Windsor C. Cutting, professor of therapeutics, Stanford University School of Medicine, Stanford University-San Francisco, has been named acting dean of the school to succeed Dr. Loren R. Chandler, who has resigned after a 20 year tenure but will continue as professor of surgery. Dr. Cutting, who has been affiliated with the faculty since 1938, will continue to serve as head of the department of pharmacology and therapeutics. Dr. Cutting, a member of the A. M. A. Council on Pharmacy and Chemistry and of the executive committee of the U. S. Pharmacopeia, is editor of "Annual Review of Medicine" and is on the editorial board of "Excerpta Medica."

COLORADO

County Society Library.—Ground has been broken at Franklin St. and East 19th Ave., Denver, for the new $300,000 Denver County Medical Society library. The land, located at the southwest corner of the Presbyterian Hospital grounds, was given the society by the Presbyterian Hospital Association. The library building will also house the offices of the county medical society. Among those participating in the ceremonies were Drs. Nolie Mumey, president of the Presbyterian Hospital Association, Lumir R. Safarik, president of the county medical society, William A. Liggett, president of the Colorado State Medical Society, W. Bernard Yegge, chairman of the county society's board of trustees, Walter W. King, medical society librarian, and James M. Perkins, all of Denver.

Personal.—Dr. Walter H. Prockter, Nucla, has been named company physician for the United States Vanadium Corporation in Uravan.——Dr. Frank H. Zimmerman, superintendent of the Colorado State Hospital at Pueblo, was recently awarded a citation by Gov. Dan Thornton on completion of a quarter century of service at the institution.——Col. Carl W. Tempel, chief of medical service, Fitzsimons Army Hospital, Denver, recently delivered the annual Hyman I. Spector lecture at the St. Louis University School of Medicine.——Dr. John D. Gillaspie, mayor of Boulder, has been named a director of the First National Bank to fill the vacancy caused by the resignation of Robert L. Stearns, former president of the University of Colorado.——Dr. Freburn L. James, formerly of Glendale, Calif., has been appointed pathologist of the Boulder-Colorado Sanitarium and Hospital and the County of Boulder General Hospital in Boulder. Dr. James was recently affiliated with the Army Hospital in Camp Roberts, Calif.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

IDAHO

State Medical Election.—At the annual meeting in Sun Valley the Idaho State Medical Association elected Dr. E. Victor Simison, Pocatello, president and Dr. Alexander Barclay Jr., Coeur d'Alene, president-elect and reelected Dr. Robert S. McKean, Boise, secretary-treasurer.

ILLINOIS

Health Council Appointed.—Dr. Robert H. Bell was recently appointed chairman of an advisory council to the Carlinville department of health, of which Dr. William W. Lusk, health officer, is an ex officio member. Dr. Robert H. Rutherford has been named special adviser, health agencies. The appointments are the result of a petition endorsed by local physicians, the Carlinville area hospital administrator, and the hospital auxiliary president, suggesting formation of a professional health department that would make recommendations pertaining to health and sanitation to the board of health.

Chicago

Personal.—Dr. Benjamin M. Gasul will deliver a series of three lectures at the City of Hope, Duarte, Calif., and the Cedars of Lebanon Hospital, Los Angeles, on "Recent Advances in Pediatric Cardiology" during the first week of September.

Meetings of Naval Reserve Medical Unit.—Medical Unit 9-20, U. S. Naval Reserve announces the following programs to be held at the U. S. Naval Reserve Armory, Randolph St. and the lake, 8 p. m.

Sept. 8, Brain Injury (movie).
Sept. 15, Arthur R. Colwell, Selective Treatment of Diabetes Mellitus.
Sept. 22, Robert H. Ebert, Newer Therapy of Tuberculosis.
Sept. 29, John Van Prohaska, Multiple Organ Resections for Carcinoma.

IOWA

Dr. Bierring Retires as Health Commissioner.—The Iowa State Medical Society recently adopted a resolution commending Dr. Walter L. Bierring, Des Moines, for his contributions to medicine in Iowa and recommended that he be placed on the list of "all-time great physicians of our state." Dr. Bierring, 84, recently retired as state health commissioner. At a testimonial dinner at the Des Moines Club, given by the state board of health, a certificate of appreciation was presented that read, in part: "We present this token of the gratitude of the people of Iowa for the 60 years you have so faithfully devoted to the improvement and preservation of their health. The accomplishments of your most distinguished career are only surpassed by the graciousness and efficiency with which you have conducted the office of commissioner during the past 20 years." Dr. Bierring, who was President of the American Medical Association in 1934, has served also as president of the Iowa State Medical Society, the Johnson County Medical Society, and the Polk County Medical Society. In 1954, he will have been president of Alpha Omega Alpha for 20 years.

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KANSAS

Pediatric Society to Be Formed.—Plans for the organization of a Kansas pediatric society will be discussed at a meeting for Kansas pediatricians and all physicians interested in pediatrics at Emporia, Sept. 19. Arrangements are being completed by a committee composed of Drs. Charles T. Hinshaw, Wichita; William H. Crouch, Topeka, and David R. Davis, Emporia. There will be an all-day scientific program, presented by out-of-state pediatricians, with a two-hour luncheon period devoted to round-table discussions. Physicians interested should write immediately to Dr. David R. Davis, 103 Gazette Bldg., Emporia.

KENTUCKY

Home Accident Prevention Program.—The W. K. Kellogg Foundation of Battle Creek, Mich., has granted $107,540 to the Kentucky State Department of Health for a three year home accident prevention program. Full support will be given by the foundation for the first two years. The state will assume some financial cost in the third year and, it is anticipated, will support the project entirely thereafter.

Personal.—Dr. Keith P. Smith, chief of staff, Corbin Municipal Hospital, was recently elected president of the Kentucky Academy of General Practice and vice-president of the Kentucky State Medical Association. Dr. Smith, who was formerly associated with his father, the late Dr. Festus S. Smith, and a brother, Dr. Truman S. Smith, previously served as manager of the Smith Hospital.——Dr. T. Eugene Andes, formerly clinical director of State Hospital, Morganton, N. C., has been named clinical director of Central State Hospital at Lakeland, to succeed Dr. Charles D. Yohe, who has become clinical director of Kentucky State Hospital, Danville.——Dr. Robert F. Hansen, former coordinator of preventive medical services for the state department of health, has been appointed deputy director of the city-county health department in Louisville. He will also be associate professor of community health at the University of Louisville Medical School.——Dr. J. Duffy Hancock, Louisville, president-elect of the Kentucky State Medical Association, has been named president-elect of the 12 state Southeastern Surgical Congress.——Dr. Jack L. Chumley, Louisville, has been appointed associate editor in charge of scientific content of the *Journal of the Kentucky State Medical Association*.——Dr. Donald L. Martin, Louisville, a surgeon at Veterans Administration Hospital, recently accepted an assignment as medical missionary in the Belgian Congo from the American Baptist Foreign Mission Society.——Dr. Edward Wilson, Pineville, was recently honored at a dinner at the Pineville Community Hospital, which he helped to found. On completion of 50 years of practice, his associates presented him with a plaque, and employees of the hospital gave him binoculars. Dr. Wilson's eldest son, Dr. Edward S. Wilson, is associated with him in practice.

MARYLAND

Dr. Becker Named Professor of Ophthalmology.—Dr. Bernard Becker, Baltimore, has been appointed professor and head of the department of ophthalmology, Washington University School of Medicine, St. Louis, replacing Dr. Lawrence T. Post, who retired from these duties July 1. Until Dr. Becker assumes his duties, about Jan. 1, 1954, Dr. Theodore E. Sanders will be acting head of the department.

MICHIGAN

Society News.—The Detroit Academy of Orthopedic Surgery has elected the following officers: president, Dr. Francis P. Walsh, vice-president, Dr. Peter G. Shifrin, and secretary-treasurer, Dr. John Lyford. The regular meetings of the Detroit Academy of Orthopedic Surgery will be held at the University Club at 6:30 p. m. on the second Monday in October, November, and December, 1953, and January, March, April, May, and June, 1954.

Is There a Doctor in the House?—A new call system, which is of interest to members of the medical profession, has been placed in operation at the Krim Theatre in Detroit. This ingenious call system will allow a physician to keep in touch with his office, hospital, or home while at this theater. It operates as follows: On entering the theater, the physician may present his card to the theater cashier, who will give him a designated number. When a call for him is received, the cashier throws a switch on a control panel in the box-office. This lights up the physician's number on a special panel screen on the left side of the stage. On seeing his special number on this screen light up, the physician proceeds to the manager's office and accepts his call over the private telephone line reserved for this purpose.

MINNESOTA

Hobby Awards.—Winners of first place awards in the Physicians' Art and Hobby Show at the 100th annual meeting of the Minnesota State Medical Association include: Drs. John P. Wendland, Minneapolis, photography; Harold J. Rothschild, St. Paul, drawing; James L. Benepe, St. Paul, oils; James J. Berens, Rochester, handicraft; Robert L. Wilder, Minneapolis, sculpture; and Alexander E. Ratelle, St. Paul, popular vote of convention visitors for his "Portrait of a Lady."

MONTANA

State Society's Jubilee Meeting in Billings.—The 75th anniversary meeting of the Montana Medical Association will be held at the Eastern Montana College of Education, Billings, Sept. 17-20, under the presidency of Dr. James M. Flinn, Helena. Guest speakers and their first presentations include:

James B. Brown, St. Louis, Management of Compound Facial Injuries.
William G. Klingberg, St. Louis, Erythroblastosis Fetalis.
John E. Hobbs, St. Louis, Office Treatment of Gynecological Problems.
Charles K. Petter, Waukegan, Ill., Evaluation of Newer Methods in Treatment of Tuberculosis.
J. William Thompson, St. Louis, Surgical Diseases of the Biliary Tract: Practical Points in Management.
Joseph C. Edwards, St. Louis, Diagnosis and Treatment of Essential Hypertension
Alson E. Braley, Iowa City, Emergency Care of Ocular and Periocular Injuries.

Clinical pathological conferences will be held Thursday and Friday at 1 p. m. The annual reception and banquet will take place at the Northern Hotel, Thursday, 6:30 p. m., with Dr. Everett H. Lindstrom, Helena, as toastmaster. Mr. Robert B. Richardson, Helena, president, Western Life Insurance Company, will deliver an address on "The Penalty of Prominence." Friday evening the Yellowstone Valley Medical Society, under the presidency of Dr. Edward W. Gibbs, will be host to all members and guests of the association at a reception, 7-9 p. m., at the Yellowstone Country Club, 1701 Rimrock Road, Billings.

NEW YORK

Course on Glaucoma.—A course on glaucoma with particular emphasis on gonioscopy and study of the anterior angle will be given at the Brooklyn Eye and Ear Hospital, Nov. 16-18, by Dr. Daniel Kravitz and staff. Application and the fee of $40 for registration by ophthalmologists may be addressed to Dr. Daniel Kravitz, Brooklyn Eye and Ear Hospital, 20 Greene Ave., Brooklyn 38.

Cancer Meeting at Rochester.—During postgraduate day at the Rochester General Hospital, Sept. 17, the morning sessions will be devoted to clinics on the various types of tumors and the afternoon to a symposium on the nonsurgical treatment of neoplastic diseases by a panel from Memorial Center for Cancer and Allied Diseases, New York. Dr. Joseph E. Rall will discuss "Use of Radioactive Isotopes in the Treatment of Cancer" and Dr. George C. Escher "Hormonal Therapy in Neoplastic Disease." This course is sponsored by the New York State Department of Health, the New York State Medical Society, the New York State Academy of General Practice, and the Rochester Regional Hospital Council.

New York City

Course in Radiological Safety.—A 15 week course in radiological safety, beginning Sept. 23, is offered by the department of industrial medicine, Post-Graduate Medical School of New York University-Bellevue Medical Center, in cooperation with the U. S. Atomic Energy Commission and New York University College of Engineering. The course will be held at the Institute of Industrial Medicine, 325 E. 38th St., Wednesdays, 4-6 p. m. It is designed to acquaint industrial hygienists, insurance engineers, health officials, safety engineers, industrial physicians, and users of radioisotopes and x-ray equipment with the fundamentals of radiation safety. A laboratory course, 7-10 p. m., to run concurrently for a limited number of those taking the lecture course, will permit practical work with survey and monitoring instruments in evaluating radiation hazards. Tuition for each course is $60. For information, address: Office of the Dean, New York University Post-Graduate Medical School, 477 1st Ave., New York 16.

Dr. Day Named Professor at State University.—Dr. Richard L. Day, associate professor of pediatrics at Columbia University College of Physicians and Surgeons, will become chairman of the department of pediatrics at the State University of New York College of Medicine at Brooklyn, Dec. 1. He will be the first full-time professor of pediatrics on the college staff. Dr. Charles A. Weymuller, who has been professor and chairman of the department on a part-time basis since 1936, will continue as full professor on a part-time basis. Dr. Day has been affiliated with the Hartford (Conn.) Hospital and Babies and Willard Parker hospitals in New York City. He was instructor in pediatrics, Cornell University Medical College, and instructor in diseases of children, assistant and associate professor of pediatrics at Columbia University College of Physicians and Surgeons. He also served for three years as research assistant in maternal and child health to the Children's Bureau in Washington, D. C., and for two years during the war as physiologist of the U. S. Army Climatic Research Laboratory in Lawrence, Mass.

PENNSYLVANIA

State Medical Meeting in Pittsburgh.—The annual meeting of the Medical Society of the State of Pennsylvania will be held at the Hotel William Penn, Pittsburgh, Sept. 22-25, under the presidency of Dr. Theodore R. Fetter, Philadelphia. Out-of-state speakers include:

Mr. Henry C. Black, Battle Creek, Mich., Business Management of Medical Practice.
Brian B. Blades, Washington, D. C., Diagnosis and Criteria of Operability of Bronchogenic Carcinoma.
William S. McCann, Rochester, N. Y., Fundamentals of Cardiorespiratory Physiology in Reference to Differential Diagnosis and Treatment of Dyspnea.
Claude S. Beck, Cleveland, Cardiac Arrest and Resuscitation.
Carl P. Huber, Indianapolis, Management of Abortion.
Roger B. Scott, Cleveland, Treatment of External Endometriosis.
Frank W. Konzelmann, Washington, D. C., Selection and Interpretation of Liver Function Tests.
Herbert Z. Lund, Greensboro, N. C., Malignant Dermatological Lesions.
John A. Campbell Colston, Baltimore, Frequency of Cancer of the Prostate.
Robert M. McAllister, Camden, N. J., Diagnosis and Management of Poliomyelitis.
Nathan B. Talbot, Boston, Use and Misuse of Cortisone in Infancy and Childhood.

At the annual state dinner in the Pittsburgh Room, Tuesday 7 p. m., Dr. James L. Whitehill, Rochester, will be installed as the 104th president, and the Benjamin Rush Awards, poster contest prizes, and certificates to Graduate Education Institute enrollees will be presented. The president's reception and dance will be held Wednesday at 9 p. m. Various alumni dinners have been scheduled for Thursday. The Pittsburgh women physicians have arranged a luncheon for Thursday at 12 noon in the Duquesne Club, 325 6th Ave. All women physicians attending the annual session are cordially invited. Tickets ($4.50) may be purchased from Dr. Dorothy K. Nash, 4136 Bigelow Blvd., Pittsburgh 13. The Woman's Auxiliary will meet at the Roosevelt Hotel, Sept. 21-25.

UTAH

State Medical Meeting and Rocky Mountain Conference.—The 58th annual meeting of the Utah State Medical Association and the 7th biennial Rocky Mountain Medical Conference will be held at the University of Utah, Salt Lake City, Sept. 10-12. The address of welcome will be delivered by Dr. Kenneth B. Castleton, Salt Lake City, president, Utah State Medical Association. Dr. Edward J. McCormick, Toledo, Ohio, President of the American Medical Association, will address the annual banquet at the Hotel Utah, Friday, 7:30 p. m., on "The Future of Medicine." His talk will be followed by a motion picture, "The Florida Everglades," presented by Dr. Russell G. Frazier, Salt Lake City. A social hour at the Alta Club will precede the banquet. Guest speakers for the scientific sessions and their first presentations include:

Edwin H. Ellison, Columbus, Ohio, Management of Intestinal Obstruction.
Priscilla White, Boston, Diabetes in Pregnancy.
James T. Priestley, Rochester, Minn., Surgical Lesions of the Adrenal Glands.
Meyer A. Rabinowitz, Brooklyn, Precordial Pain—Its Causes and Differential Diagnosis.
M. Digby Leigh, Vancouver, B. C., Emergency Complications of Anesthesia and Their Management.
Alexander D. Langmuir, Atlanta, Ga., The Changing Panorama of Medical Care and Its Implications in Medical Education.

Round-table discussions will follow luncheon Thursday and Friday. Color television clinics will be presented Thursday and Friday afternoons and Saturday morning, and on Friday at 8:45 a. m. there will be a color television chest panel. A social hour, 6:30 p. m., will precede the stag dinner for members of the Rocky Mountain Medical Conference and University of Utah Medical Alumni, which will be held Thursday at the Aviation Club.

VERMONT

Personal.—Dr. John P. J. Cummins was initiated recently into Alpha Omega Alpha, national honorary medical society. He was elected as a physician who typifies attributes of the "ideal general practitioner." Dr. Cummins and two sons, who are also graduates of the University of Vermont College of Medicine, Burlington, practice in Ticonderoga, N. Y.——Dr. Delbert D. Griffith, Bristol, who graduated from the University of Vermont College of Medicine, Burlington, June 14, received one of the five national $1,000 scholarship awards given annually by the Mead Johnson Company to a graduating senior, to enable him to take a year of general practice residency following internship.

Meetings on Cardiology.—A cardiovascular symposium, sponsored by the Vermont Heart Association in cooperation with the New Hampshire Heart Association and the University of Vermont College of Medicine, Burlington, will be held at Oakledge Manor, Burlington, Sept. 8-10. Guest speakers from the United States include Dr. Irvine H. Page, Cleveland (Neural and Hormonal Control of the Blood Vessels) and Dr. Henry A. Schroeder, St. Louis (Control of Hypertension). Registration fee, $2; no fee for members of the New Hampshire and Vermont heart associations, students, residents, and interns of New Hampshire and Vermont hospitals. For information write to Dr. Wilhelm Raab, University of Vermont College of Medicine, Burlington (Tel. 3-3451, ext. 33; 4-4511, ext. 349; or 3-3886).

Two cardiology seminars, both arranged by the division of experimental medicine, University of Vermont College of Medicine, and sponsored by the Vermont Heart Association, will be held Sept. 10-12. The seminar on "Hormones and Nerves in Cardiac Pathology and Therapy," conducted by Dr. Wilhelm Raab, professor of experimental medicine, University of Vermont College of Medicine, Burlington, will have as guest speaker Dr. Irvine H. Page. The following program will be presented:

Thursday, Medical College, Hall A, 2-5 p.m., Hormonal and Neurohormonal Influences on the Vascular System and on Myocardial Metabolism.
Friday, Medical College, Hall A, 8-10 p.m., Neurohormonal Pathogenesis and Treatment of Angina Pectoris and of Cardiogenic Shock.
Saturday, Bishop DeGoesbriand Hospital, Auditorium, 1:30-3 p.m., Hormonal Factors in the Origin and Treatment of Congestive Heart Failure.

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The seminar on electrocardiography, conducted by Dr. Eugene Lepeschkin, associate professor of experimental medicine, University of Vermont, will have as guest speakers Dr. Charles E. Kossmann, associate professor, New York University College of Medicine, and Dr. Harold D. Levine, assistant clinical professor, Harvard Medical School, Boston. "The Normal Electrocardiogram and Its Limits" will be discussed Thursday, 8-10:30 p. m., and Friday, 8:30 a. m. to 12 noon. Discussions on "The Electrocardiographic Diagnosis of Myocardial Infarction" will be held Saturday, 8:30 a. m. to 12 noon and 8:30-10:30 p. m. Part of the afternoon will be kept free for inspection of the local hospitals and for sight-seeing trips on Lake Champlain and in the Green Mountains. Registration fees: seminar on hormones, etc., $5; seminar on electrocardiography, $10. No registration fees will be required of faculty and students of the University of Vermont and of residents and interns of Vermont hospitals.

WASHINGTON

State Medical Meeting in Seattle.—The annual meeting of the Washington State Medical Association will be held at the Olympic Hotel, Seattle, Sept. 13-16. Dr. Charles E. Watts, Seattle, will deliver the presidential address Tuesday, 11 a. m., in the Olympic Bowl. Dr. Frank E. Wilson, Director, A. M. A. Washington, D. C., office, will give a "Purview of Federal Medical Legislation." Guest speakers for the scientific sessions include:

Chester M. Jones, Boston, Trigger Mechanisms and Digestive Tract Symptoms.
Paul W. Schafer, Kansas City, Kan., Clinical Problem of Lung Cancer.
Alfred E. Maumenee, San Francisco, Recent Concepts of the Etiology and Treatment of Glaucoma.
C. Frederick Ferciot, Lincoln, Neb., Congenital Foot Conditions in Children.

On Tuesday morning, the ear, nose, and throat section will present a panel discussion on "The Cleft Palate and Harelip Problem." Wednesday, 2 p. m., a symposium on endocrinology will be held, with Dr. Robert H. Williams, Seattle, as moderator. At 2:50 p. m., a panel discussion on "Clinical Endocrinology" will be presented by Drs. Carl G. Heller, Portland, Ore., and Lester J. Palmer, John Bakke, and Robert H. Williams, Seattle. On Sunday at 6 p. m., there will be a no-host family dinner, honoring 50 year practitioners. Monday the Salmon Fishing Derby will start at Ray's Boathouse, at 5:45 a. m. The golf tournament will begin at the Seattle Golf and Country Club at 7:30 a. m. Tuesday noon the general practitioners' luncheon will be held in the Georgian Room, and the Washington State Medical Association Civil Defense Committee will meet in the Olympic Bowl. The annual banquet and ball, preceded by refreshments in the Olympic Bowl, 6:30 p. m., will be held in the Georgian Room (dress is optional). The Washington State Medical Association will be host for a public relations luncheon Wednesday, at which Dr. George F. Lull, Secretary and General Manager, will discuss "You and Your A. M. A.," and Mr. Rollen Watterson, executive secretary, Alameda-Contra Costa (Calif.) Medical Association, will speak on "Fundamentals of Public Relations for a Medical Society." The reception for new presidents, 6:30 p. m., Junior Ballroom, will honor Dr. Alvia G. Young, Wenatchee, Washington State Medical Association president, and Mrs. A. George Hanson, Seattle, auxiliary president.

WEST VIRGINIA

Meeting on Tuberculosis.—The annual meeting of the West Virginia Tuberculosis and Health Association will be held at the Hotel Fairmont in Fairmont, Sept. 9-10, in cooperation with the West Virginia Conference of Tuberculosis Workers, the West Virginia Trudeau Society, and the medical section of the West Virginia Tuberculosis and Health Association. Wednesday afternoon the West Virginia Trudeau Society will present the following program:

Ambulant Treatment of Tuberculosis with Drugs, Julius L. Wilson, Philadelphia.
Management of Chronic Cough, Edward Lebovitz, Pittsburgh.
Present Day Surgical Concept of the Treatment of Pulmonary Tuberculosis, Haven M. Perkins, Charleston.
X-Ray Symposium on Chest Diseases, Rupert W. Powell, Fairmont.

Dr. George F. Evans, Clarksburg, program chairman, urges all physicians who wish to have films reviewed, to have them at the conference. The general session of the West Virginia Tuberculosis and Health Association Thursday morning will include papers on "Nutrition in Tuberculosis Control" and "The Value of a Chest X-Ray for All Admissions to a General Hospital." The scientific session will close with an address by Mr. W. C. Handlan, Fairmont, director of advertising and publicity, Monongahela Power Company, whose subject will be "Public Relations Per Se."

WISCONSIN

Hearing Problems in Industry.—Clinics on hearing conservation in industry will be held in Wausau, Sept. 10, Oshkosh, Sept. 24, and Racine, Oct. 14, under the auspices of the Wisconsin Council of Safety, State Medical Society of Wisconsin, Wisconsin State Board of Health, Wisconsin Manufacturers Association, and the Wisconsin State Nurses Association. "Hearing Problems in Relation to Industrial Noise Exposure" will be discussed at Wausau by Dr. Aram Glorig Jr., Washington, D. C., and at Oshkosh and Racine by D. E. Wheeler, Ph.D., Los Angeles. Participants in a panel on "Responsibilities of Physicians and Nurses in an Industrial Hearing Conservative Program" will be Drs. Thomas L. Tolan, Meyer S. Fox, and Paul T. Whitaker, and Miss Ruth Martineau, R.N., all of Milwaukee. Registration may be arranged through the Wisconsin Council of Safety, State Office Building, Madison. The $5 fee includes luncheon.

GENERAL

Psychiatric Meeting in Kansas City.—The Mid-Continent Psychiatric Association, a district branch of the American Psychiatric Association, will meet at the Hotel President in Kansas City, Mo., Sept. 26-27. All interested members of the profession are invited. There is no registration fee. Among the speakers will be Drs. Kenneth E. Appel, Philadelphia, Daniel Blain, Washington, D. C., Lloyd J. Thompson, Winston-Salem, N. C., and Neville Murray, Galveston, Texas.

Fellowships for Basic Research in Arthritis.—The Arthritis and Rheumatism Foundation offers the following research fellowships in the basic sciences related to arthritis: (1) predoctoral fellowships, ranging from $1,500 to $3,000 per annum, depending on the family responsibilities of the fellow, tenable for one year with prospect of renewal; (2) postdoctoral fellowships, ranging from $3,000 to $6,000 per annum, depending on family responsibilities, tenable for one year with prospect of renewal; (3) senior fellowships for experienced investigation, carrying an award of $6,000 to $7,500 per annum and tenable for five years. Deadline for applications is Nov. 1. Applications will be reviewed and awards made by Feb. 15, 1954. For information address the Medical Director, Arthritis and Rheumatism Foundation, 23 W. 45th St., New York 36.

Roentgen Ray Society Meeting in Cincinnati.—The annual meeting of the American Roentgen Ray Society will be held at the Netherland Plaza Hotel, Cincinnati, Sept. 29 to Oct. 2. The meeting will be called to order at 8:30 a. m. by Dr. Charles L. Martin, Dallas, Texas, president. After an address of welcome by Dr. Stanley E. Dorst, dean, University of Cincinnati College of Medicine, the president-elect, Dr. Harry M. Weber, Rochester, Minn., will be installed in office and will deliver the inaugural address. Dr. David G. Pugh, Rochester, Minn., will serve as moderator for a symposium, "A Practical Consideration of Mitral Stenosis," Tuesday morning. Tuesday evening Dr. Paul C. Hodges, professor of radiology, University of Chicago School of Medicine, will deliver the Caldwell lecture on "Normal Bone, Diseased Bone, Dead Bone." Wednesday morning there will be a symposium on radiation protection, with Dr. Andrew H. Dowdy, Los Angeles, as moderator.

Surgeons Meeting in New York.—The annual congress of the United States and Canadian sections of the International College of Surgeons will be held at the Waldorf-Astoria in New York Sept. 13-17. Dr. William R. Lovelace, Albuquerque, N. Mex., is president of the United States section, and Dr. Douglas U. McGregor, Hamilton, Ontario, president of the Canadian section. The Monday morning session will be on "Advances in the Treatment of Cancer." Participants will include Drs. Charles S. Cameron, Cornelius P. Rhoads, and George N. Papanicolaou, New York. In other general assemblies, advances will be discussed in the treatment of cardiopulmonary diseases, thyroid surgery, surgery of stomach and intestines, surgical treatment of diseases of the esophagus, vascular surgery, and intervertebral disk lesions. A film forum will be held Monday evening, a forum on pharmacology in surgery Tuesday evening, the annual banquet Wednesday evening, and the annual convocation in Carnegie Hall on Thursday.

Obstetricians, Gynecologists, and Abdominal Surgeons.—The annual meeting of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons will be held at the Homestead, Hot Springs, Va., Sept. 10-12, under the presidency of Dr. Nicholson J. Eastman, Baltimore. Speakers by invitation include:

John C. Ullery, Philadelphia, Management of Pregnancy in Heart Disease.
William N. Thornton Jr., Charlottesville, Va., Late Urinary System Complications Following Radical Hysterectomy for Carcinoma of the Cervix.
Louis M. Hellman, Brooklyn, Factors Influencing the Occurrence of and Changes in the Reserve Cell in the Human Cervix.
W. Nicholson Jones, Birmingham, Ala., Role of Antibiotics in Management of Incomplete Abortions.
Ronald R. Greene, Chicago, Papillomatous Lesions of the Cervix.

Discussants by invitation will be Prof. John F. Cunningham, Dublin, Ireland, William K. Strother Jr., Dallas, Texas, William J. Dieckmann, Chicago, and Dr. Axel N. Arneson, St. Louis. The Joseph Price orator, Dr. Gordon King, professor of obstetrics and gynecology, Hong Kong University, will speak on "Advanced Extrauterine Pregnancy."

Tri-State Obstetric Seminar.—The maternal welfare committee of the Florida Medical Association and the bureaus of maternal and child health of South Carolina, Georgia, and Florida will sponsor an obstetric seminar at the Sheraton Beach Hotel, Daytona Beach, Fla., Sept. 14-16. Dr. Eugene F. McCall, Jacksonville, will serve as moderator for a discussion on "Maternal and Fetal Mortality Trends in South Carolina, Georgia, and Florida" by representatives from the state health departments and state medical associations. Dr. Hugh A. Carithers, Jacksonville, will speak on "Care of the Premature and Newborn Infant." Out-of-state speakers will present the following program:

Anesthesia and Analgesia in Obstetrics, John Adriani, New Orleans, or William H. Galvin Jr., Emory University, Ga.
Heart Disease in Pregnancy, Charles A. Poindexter, New York.
Caesarian Section, M. Edward Davis, Chicago.
Management of Prolonged Labor—Induction of Labor, Duncan E. Reid, Boston.
Abnormal Presentations and Forceps Delivery, Allan C. Barnes, Columbus, Ohio.
Bleeding in Pregnancy, Carl P. Huber, Indianapolis.
Care of the Premature and Newborn Infant, Robert B. Lawson, Winston-Salem, N. C.
Erythroblastosis—Resuscitation of the Newborn, Edith L. Potter, Chicago.

Mississippi Valley Medical Meeting.—The annual meeting of the Mississippi Valley Medical Society will be held at the Elks Club, Springfield, Ill., Sept. 23-25, under the presidency of Dr. John I. Marker, Davenport, Iowa. On Wednesday Dr. John A. Saxton, St. Louis, will serve as moderator for a clinical pathological conference. Thursday there will be a panel on diabetes, with Dr. Robert M. Kark, Chicago, as moderator. Dr. Alphonse McMahon, St. Louis, will be moderator for the noon round-table luncheon. The informal evening fellowship hour, banquet, and entertainment will be held Thursday. Dr. Melvin A. Casberg, Washington, D. C., assistant secretary of defense (health and medical), will speak on "The Health Professions and National Defense." Dr. Willis I. Lewis, Herrin, Ill., president of the Illinois State Medical Society, and Dr. E. Claude Bohrer, West Plains, Mo., president of the Missouri State Medical Association, will also address the evening meeting. Dr. Arthur H. Keeney, Louisville, winner of the first prize in the 1953 Mississippi Valley Medical Society essay contest, will read his paper on "Grass Roots in the Prevention of Blindness," and Dr. Robert L. Sanders, Memphis, Tenn., honor award recipient, will present "Gallbladder and Duct Problems, Medical and Surgical Aspects" (lantern slides). Dr. Walter R. Bett, London, England, will discuss "Medical History in Eponyms." Dr. William A. Bloom, Fayette, Mo., past president of the Missouri State Medical Association, will serve as moderator for the round-table luncheon on Friday and Dr. Daniel L. Sexton, St. Louis, as moderator of a panel, "What's New in Medicine and Surgery." There is no registration fee. For information, write to Dr. Harold Swanberg, secretary, 209-224 W.C.U. Bldg., Quincy, Ill.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States, its territories, and possessions in the weeks ended as indicated:

Area	Aug. 22, 1953 Paralytic Type	Aug. 22, 1953 Total Cases Reported	Aug. 23, 1952 Total
New England States			
Maine	20	40	15
New Hampshire	..	6	2
Vermont	5	6	..
Massachusetts	14	31	54
Rhode Island	9	18	1
Connecticut	2	20	41
Middle Atlantic States			
New York	53	75	269
New Jersey	28	59	59
Pennsylvania	..	62	92
East North Central States			
Ohio	36	207	203
Indiana	..	44	79
Illinois	42	195	289
Michigan	67	242	300
Wisconsin	..	49	127
West North Central States			
Minnesota	57	193	219
Iowa	14	64	246
Missouri	11	35	84
North Dakota	4	14	16
South Dakota	..	12	81
Nebraska	4	13	168
Kansas	14	33	101
South Atlantic States			
Delaware	..	4	13
Maryland	19	41	11
District of Columbia	3	3	15
Virginia	16	64	58
West Virginia	13	27	46
North Carolina	19	54	27
South Carolina	6	13	7
Georgia	7	17	43
Florida	7	12	23
East South Central States			
Kentucky	2	13	119
Tennessee	16	39	38
Alabama	9	16	15
Mississippi	..	13	61
West South Central States			
Arkansas	12	17	18
Louisiana	6	16	45
Oklahoma	4	28	75
Texas	15	68	162
Mountain States			
Montana	7	15	11
Idaho	..	3	19
Wyoming	4	7	5
Colorado	8	15	36
New Mexico	..	5	29
Arizona	16	53	23
Utah	..	3	10
Nevada	..	4	1
Pacific States			
Washington	..	12	81
Oregon	8	10	23
California	91	192	121
Territories and Possessions			
Alaska	..	..	..
Hawaii	..	..	1
Puerto Rico	..	..	2
Total	668	2,253	3,504

LATIN AMERICA

Pediatric Meetings.—The seventh International Congress of Pediatrics will be held Oct. 12-17 in Havana, Cuba, immediately after the annual meeting of the American Academy of Pediatrics in Miami, Fla., Oct. 6-9. The main topics will be "Epilepsy in Infancy and Childhood," "Diagnosis of Congenital Malformations of the Heart and Great Vessels Susceptible of Surgical Treatment," "Problems of the Premature Infant," "Complications of Primary Tuberculosis," and "Metabolism and Nutritional Problems." Round-table discussions will be held on the following topics: BCG vaccination, nephrosis in children, bacteriology in infantile diarrhea, antibiotics, virus diseases, neoplastic diseases, problems of hematology, pediatric surgery, and pediatric endocrinology. Among the physicians who will participate in the program are Drs. Irvine McQuarrie, Minneapolis, William G. Lennox, Boston, Meyer A. Perlstein, Chicago, Stanley Gibson, Chicago, Helen B. Taussig, Baltimore, Benjamin M. Gasul, Chicago, Clement A. Smith, Boston, Edith H. Lincoln, New York, Paul Gyorgy, Philadelphia, Daniel C. Darrow, New Haven, Conn., Henry G. Poncher, Chicago, Joseph Stokes, Philadelphia, Sidney Farber, Boston, and Louis K. Diamond, Boston. Communications should be addressed to: The Secretaries, Symposium on Child Health, division of medicine, University College of the West Indies, Jamaica, B. W. I.

FOREIGN

Congress of Medicine in France.—The French Congress of Medicine at Paris Oct. 15-17 will be devoted to discussions on arterial hypertension, hypersplenism, and other subjects. Information may be obtained from the Bureau des Voyages Pratiques Exprinter, 26, Avenue de l'Opera, Paris 1.

Institute for Pharmacology.—The 20th meeting of the German Institute for Pharmacology (located in Dusseldorf) will be held in Bonn, Oct. 4-7. Topics for discussion will be "New Methods of Stabilizing the Nervous System and the Metabolism" and "Blood Coagulation." Information may be obtained from Prof. H. F. Zipf, secretary of the Pharmacological Institute, Reuterstr. 2 b, Bonn, Germany.

Meeting on Blood Transfusion.—The International Blood Transfusion Society will hold its transfusion days, Sept. 12-13, at the Transfusion Centre, Geneva, Switzerland. On Saturday there will be a symposium on "Plasma Substitutes" and on Sunday a symposium on "New Concepts of Pharmacodynamics of the Shock (So-Called Refrigeration)." For information apply to the Centre de Transfusion Sanguine, Hôpital Cantonal, Geneva.

Cobalt Bomb for Italy.—The first Canadian-made "cobalt bomb" to help fight cancer in Europe, which was recently exhibited at the International Congress of Radiology in Copenhagen, Denmark, has been sent for installation to a hospital in Trento, Italy. It is reported that the cost of importing slightly more than one ounce of radioactive cobalt and the 22 tons of protective and control machinery that accompanied it was 67 million lire ($107,000). The American Mutual Security Agency contributed nearly half the cost, and Italian authorities and public subscriptions paid the rest.

Congress of Otorhinolaryngology.—The 51st French Congress of Otorhinolaryngology will hold its session at the Faculty of Medicine of Paris, Oct. 26-29 under the presidency of Dr. Louis Leroux of Paris, with Prof. Leon Binet, dean of the Faculty of Medicine of Paris, as honorary president. Topics for discussion include "Present Facts of the Physiology of Hearing and Their Clinical and Surgical Applications" and "New Acquisitions of Radio-otology." During the congress, morning operative sessions will be held at various hospitals. For information address: Dr. Henri Flurin, Cauterets, or Dr. Henry Guillon, 6, Ave MacMahon, Paris (7e).

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Clinical Meeting, St. Louis, Dec. 1-4.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

NATIONAL CONFERENCE ON PHYSICIANS AND SCHOOLS, Moraine-on-the-Lake Hotel, Highland Park, Ill., Sept. 30-Oct. 2. Dr. W. W. Bauer, 535 N. Dearborn St., Chicago 10, Director.

AMERICAN ACADEMY FOR CEREBRAL PALSY, Western Hills Hotel, Fort Worth, Texas, Oct. 30-31. Dr. Harry E. Barnett, 116 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 12-16. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Municipal Auditorium, Miami, Fla., Oct. 6-9. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, LaSalle Hotel, Chicago, Oct. 17-20. Miss Marjorie Saunders, 3500 Gaston Ave., Dallas 4, Texas, Secretary.

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Congress Hotel, Chicago, Oct. 9-11. Dr. Edwin P. Jordan, P. O. Box 114, Charlottesville, Va., Executive Director.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Palace Hotel, San Francisco, Oct. 5-9. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Secretary.

AMERICAN ASSOCIATION OF OBSTETRICIANS, GYNECOLOGISTS AND ABDOMINAL SURGEONS, The Homestead, Hot Springs, Va., Sept. 10-12. Dr. William F. Mengert, 2211 Oak Lawn Ave., Dallas, Texas, Secretary.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Drake Hotel, Chicago, Oct. 1-3. Dr. James K. Stack, 700 North Michigan Blvd., Chicago, Secretary.

AMERICAN COLLEGE OF SURGEONS, Conrad Hilton Hotel, Chicago, Oct. 5-9 Dr. Michael L. Mason, 40 East Erie St., Chicago, Secretary.

AMERICAN DENTAL ASSOCIATION, Cleveland, Sept. 28-Oct. 1. Dr. Harold Hillenbrand, 222 E. Superior St., Chicago 11, General Secretary.

AMERICAN FRACTURE ASSOCIATION, Mission Inn, Riverside, Calif., Oct. 12-15 Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Elk's Club, Springfield, Ill., Sept. 23. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Netherland Plaza, Cincinnati, Sept. 29-Oct. 2. Dr. Barton R. Young, Germantown Hospital, Philadelphia 44, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Olympic Hotel, Seattle, Oct. 6-9. Dr. J. Earl Remlinger Jr., Room 1101, 188 W. Randolph St., Chicago, Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, Drake Hotel, Chicago, Oct. 12-16. Dr. Clyde G. Culbertson, 1040 W. Michigan St., Indianapolis, Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, Fall Meeting, Yale University, New Haven, Conn., Sept. 7-9. Dr. Carl C. Pfeiffer, 1853 West Polk St., Chicago 12, Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, Hotel Claridge, Atlantic City, N. J., Oct. 26-28. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA, Hotel Statler, New York, Oct. 14-16. Dr. Henry B. Kirkland, P. O. Box 594, Newark 1, N. J., Secretary.

ASSOCIATION OF MEDICAL ILLUSTRATORS, Sheraton Hotel, Baltimore, Oct. 5-7. Miss Evelyn J. Erickson, 1512 St. Antoine St., Detroit 26, Secretary

CENTRAL NEUROPSYCHIATRIC ASSOCIATION, Claypool Hotel, Indianapolis, Oct. 15-17. Dr. Hamilton Ford, 112 North Blvd., Galveston, Texas, Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Drake Hotel, Chicago, Oct. 12-16. Dr. Harry P. Smith, 203 N. Wabash Ave., Chicago 1, Secretary.

COLORADO STATE MEDICAL SOCIETY, Shirley-Savoy Hotel, Denver, Sept. 29-Oct. 2. Mr. Harvey T. Stethman, 835 Republic Bldg., Denver 2, Executive Secretary.

CONSTANTINIAN SOCIETY, Battery Park Hotel, Asheville, N. C., Oct. 18-21. Dr. C. F. Shook, Medical Director, Owens-Illinois Glass Company, Toledo 1, Ohio, Secretary.

DELAWARE, MEDICAL SOCIETY OF, Hotel du Pont, Wilmington, Oct. 12-14. Dr. Andrew M. Gehret, 822 North American Bldg., Secretary.

DISTRICT OF COLUMBIA, MEDICAL SOCIETY OF THE, Hotel Statler, Washington, Oct. 5-7. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

GULF COAST CLINICAL SOCIETY, Admiral Semmes Hotel, Mobile, Ala., Oct. 15-16. Dr. William J. Atkinson Jr., 1217 Government St., Mobile 20, Ala., Secretary.

GULF COAST CONFERENCE ON INDUSTRIAL HEALTH, Shamrock Hotel, Houston, Tex., Oct. 1-3. Dr. Sidney Schnur, 411 Medical Arts Bldg., Houston 2, Tex., Co-Chairman.

INDIANA STATE MEDICAL ASSOCIATION, French Lick, Oct. 19-21. Mr. James A. Waggener, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Kansas City, Mo., Sept. 28-Oct. 1. Dr. W. H. Algie, 825 North 7th Street, Kansas City, Kans., Secretary.

KENTUCKY STATE MEDICAL ASSOCIATION, Brown Hotel, Louisville, Sept. 22-24. Dr. Bruce Underwood, 620 South Third St., Louisville 2, Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Pantlind Hotel and Civic Auditorium, Grand Rapids, Sept. 23-25. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Secretary.

MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH, Congress Hotel, Chicago, Oct. 29. Dr. Robert J. Glaser, 600 S. Kingshighway Blvd., St. Louis 10, Secretary.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Springfield, Ill., Sept. 23-25. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MONTANA MEDICAL ASSOCIATION, Northern Hotel, Billings, Sept. 17-20. Mr. L. R. Hegland, 104 North Broadway, Billings, Executive Secretary.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION, Hotel Biltmore, Los Angeles, Oct. 12-17. Dr. A. Xerxes Rossien, 1819 Broadway, New York 23, Secretary.

NEUROSURGICAL SOCIETY OF AMERICA, The Broadmoor, Colorado Springs, Colo., Sept. 23-27. Dr. C. D. Hawkes, 22 North Manassas St., Memphis 5, Tenn., Secretary.

NEVADA STATE MEDICAL ASSOCIATION, Carter Hotel, Elko, Sept. 24-26. Dr. William A. O'Brien III, 505 Chestnut St., Reno, Secretary.

NEW ENGLAND OBSTETRICAL AND GYNECOLOGICAL SOCIETY, Hotel Somerset, Boston, Oct. 28. Dr. Carmi R. Alden, 270 Commonwealth Ave., Boston, Secretary.

NEW HAMPSHIRE MEDICAL SOCIETY, Equinox House, Manchester, Vt., Oct. 4-6. Dr. Deering G. Smith, 44 Chester St., Nashua, Secretary.

NORTH PACIFIC SOCIETY OF INTERNAL MEDICINE, Harrison, B. C., Canada, Sept. 18-19. Dr. Clarence C. Pearson, 1115 Terry Ave., Seattle 1, Wash., Secretary.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Wichita Falls, Texas, Sept. 16. Dr. C. H. Wilson, 1300 Eighth St., Wichita Falls, Texas, Secretary.

OKLAHOMA CITY CLINICAL SOCIETY, Oklahoma City, Oct. 26-29. Miss Alma F. O'Donnell, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secretary.

OMAHA MID-WEST CLINICAL SOCIETY, Hotel Paxton, Omaha, Oct. 26-30. Miss Irene Rau, 1031 Medical Arts Bldg., Omaha 2, Executive Secretary.

OREGON STATE MEDICAL SOCIETY, Heathman Hotel, Portland, Oct. 14-17. Dr. Charles E. Littlehales, 833 S.W. Eleventh Ave., Portland 5, Secretary.

PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF, William Penn Hotel, Pittsburgh, Sept. 21-24. Dr. Harold B. Gardner, 230 State St., Harrisburg, Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

NORTH DAKOTA, Fargo, Sept. 12. Dr. Robert B. Radl, 221 Fifth St., Bismarck, Governor.

ARKANSAS-OKLAHOMA, Tulsa, Okla., Sept. 19. Dr. Wann Langston, 117 North Broadway, Oklahoma City 2, Governor.

WESTERN NEW YORK, Syracuse, Oct. 9. Dr. E. C. Reifenstein, 109 South Warren St., Syracuse 2, Governor.

OHIO, Dayton, Oct. 9. Dr. Charles A. Doan, Ohio State University College of Medicine, Columbus 10, Governor.

MONTANA-WYOMING, Missoula, Mont., Oct. 9-10. Dr. Harold W. Gregg, 127 West Park Street, Butte, Mont., Governor.

SOUTHEASTERN—Cuba, Alabama, Florida, Georgia, South Carolina—St. Simons, Sea Island, Ga., Oct. 16-17. Dr. Carter Smith, 384 Peachtree St. N.E., Atlanta 3, Ga., Chairman.

SOUTH CENTRAL BRANCH, AMERICAN UROLOGICAL ASSOCIATION, Kansas City, Mo., Sept. 20-23. Dr. Rex E. Van Duzen, 721 Medical Arts Bldg., Dallas, Texas, Chairman.

SOUTHERN MEDICAL ASSOCIATION, Municipal Auditorium, Atlanta, Ga., Oct. 26-29. Mr. C. P. Loranz, 1020 Empire Bldg., Birmingham 3, Ala., Secretary.

SOUTHWESTERN MEDICAL ASSOCIATION, El Conquistador Hotel, Tucson, Ariz., Oct. 29-31. Dr. C. C. Stapp, 800 Montana St., El Paso, Texas, Secretary.

SOUTHWESTERN SURGICAL CONGRESS, Hotel Utah, Salt Lake City, Sept. 21-23. Dr. C. R. Rountree, 1227 Classen St., Oklahoma City 3, Secretary.

TENNESSEE VALLEY MEDICAL ASSEMBLY, Read House Hotel, Chattanooga, Sept. 28-29. Dr. William G. Stephenson, 612 Medical Arts Bldg., Chattanooga 3, President.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, Waldorf-Astoria, New York, Sept. 13-17. Dr. Karl Meyer, 1516 Lake Shore Drive, Chicago 10, Secretary.

UTAH STATE MEDICAL ASSOCIATION, Salt Lake City, Sept. 10-12. Dr. Homer E. Smith, 42 South Fifth East St., Salt Lake City 2, Secretary.

VERMONT STATE MEDICAL SOCIETY, Equinox House, Manchester, Oct. 4-6. Dr. James P. Hammond, 542 Main St., Bennington, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Hotel Roanoke, Roanoke, Oct. 18-21. Mr. Robert I. Howard, 1105 W. Franklin St., Richmond 20, Executive Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Sept. 13-16. Dr. Bruce Zimmerman, 338 White-Henry-Stuart Bldg., Seattle 1, Secretary.

WESTERN ORTHOPEDIC ASSOCIATION, Sun Valley, Idaho, Oct. 5-8. Dr. Forrest L. Flashman, 1301 Spring St., Seattle 4, Secretary.

WISCONSIN, STATE MEDICAL SOCIETY OF, Hotel Schroeder, Milwaukee, Oct. 5-7. Mr. Charles H. Crownhart, 704 East Gorham St., Madison 3, Secretary.

FOREIGN

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

CANADIAN MEDICAL ASSOCIATION, Vancouver, B. C., Canada, June 18-22, 1954. Dr. T. C. Routley, 135 St. Clair Ave. W., Toronto 5, Ont., Canada, General Secretary.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Chateau Frontenac, Quebec, Canada, October 26-29. Dr. A. William Friend, 515 Nome Ave., Akron 20, Ohio, Chairman, Program Committee.

CONGRESS OF THE INTERNATIONAL SOCIETY OF ANGIOLOGY, Lisbon, Portugal, Sept. 18-20. Dr. Henry Haimovici, 105 East 90th St., New York 28, N. Y., U. S. A., Secretary.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 14-20. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

INTERIM MEETING, AERO MEDICAL ASSOCIATION, University of Brussels Medical School, Brussels, Belgium, Sept. 24-27. Dr. André Allard, Medical Director of SABENA, 145 Rue Royale, Brussels, Belgium, Secretary.

INTERNATIONAL CANCER CONGRESS, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954 Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS OF THE EUROPEAN SOCIETY OF HAEMATOLOGY, Amsterdam, Holland, Sept. 8-12. Dr. M. C. Verloop, Maliesingle 15, Utrecht, Holland, Secretary.

INTERNATIONAL CONGRESS ON GROUP PSYCHOTHERAPY, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

INTERNATIONAL CONGRESS OF HYDROCLIMATISM AND THALASSOTHERAPY, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni Venac 1, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Sao Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U.S.A., Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept 6-12. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS ON OBSTETRICS AND GYNECOLOGY, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba President.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL NEUROLOGICAL CONGRESS, Lisbon, Portugal, Sept. 7-12. Prof. Almeida Lima, Avenida do Brazil 53, Lisbon, Portugal, Secretary-General.

INTERNATIONAL OFFICE OF DOCUMENTATION OF MILITARY MEDICINE, Rome, Italy, Oct. 14-18. Colonel Medecin Prof. A. Campana, Office of the Ministero della Difesa-Esercito, Rome, Italy, Secretary.

INTERNATIONAL SOCIETY FOR THE STUDY OF BIOLOGICAL RHYTHMS, Basle, Switzerland, Sept. 18-19. For information write: Prof. Dr. F. Georgi, Neurologische Universitats-Poliklinik, Socinstrasse 55, Basle, Switzerland.

JOURNEES MEDICALES, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

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LATIN AMERICAN CONGRESS OF OBSTETRICS AND GYNECOLOGY, Buenos Aires, Argentina, Oct. 26-31.

LATIN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro Medico, Caracas, Venezuela, Secretary-General.

PACIFIC SCIENCE CONGRESS, Quezon City and Manila, Philippines, Nov. 16-28. Dr. Patrocinio Valenzuela, College of Pharmacy, University of the Philippines, Quezon City, Philippines, Secretary-General.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Mexico, D.F., Mexico, Feb. 28-March 4, 1954.

PAN AMERICAN MEDICAL ASSOCIATION, International Medical Cruise Congress, S.S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

PAN AMERICAN MEDICAL WOMEN'S ALLIANCE, Beekman Towers Hotel, New York, N. Y., Sept. 24-Oct. 1. Dr. Ina Marsh, 140 Linwood Ave., Buffalo, N. Y., U. S. A., Registration Chairman.

PERSIAN GULF MEDICAL SOCIETY, Dhahran, Saudi Arabia, Dec. 7-8. Dr. N. J. Conan Jr., Department of Internal Medicine, Arabian American Oil Company, Dhahran, Saudi Arabia, Secretary.

REGIONAL MEETING, AMERICAN COLLEGE OF PHYSICIANS, San Juan, Puerto Rico, Oct. 15-17. Dr. R. Rodriquez-Molina, Veterans Administration Center, San Juan, Puerto Rico, Governor.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C.1, England, Secretary.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

ALASKA:* Anchorage and Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

ARIZONA:* *Examination.* Phoenix, Oct. 22-23. *Endorsement.* Phoenix, Oct. 24. Executive Secretary, Mr. Robert Carpenter, 401 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, Nov. 5-6. Sec., Dr. Joe Verser, Harrisburg.

COLORADO:* *Reciprocity.* Denver, Oct. 13. Final date for filing application is Sept. 14. *Examination.* Denver, Dec. 15-16. Final date for filing application is Nov. 14. Executive Secretary, Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Regular. Examination.* New Haven, Nov. 10-11. Reciprocity actions are taken continuously. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, Nov. 10-11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: Dover, Jan. 12-14, 1954. Sec., Dr. Joseph S. McDaniel, 229 South State St., Dover.

DISTRICT OF COLUMBIA:* *Reciprocity.* Washington, Sept. 14. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA:* *Examination.* Jacksonville, Nov. 22-24. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami 36.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana.

IDAHO: Boise, Jan. 11-13, 1954. Executive Secretary, Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: Chicago, Oct. 6-8. Superintendent of Registration, Mr. Fredric B. Selcke, State House, Springfield.

IOWA:* *Examination.* Des Moines, Dec. 7-9. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 9-10. Sec., Dr. O. W. Davidson, 864 New Brotherhood Bldg., Kansas City.

MAINE: Portland, Nov. 12-13. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MARYLAND: *Examination.* Baltimore, Dec. 8-11. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1.

MICHIGAN:* *Examination.* Lansing, Oct. 14-16. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

MINNESOTA:* Minneapolis, Oct. 20-22. Sec., Dr. E. M. Jones, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. Assistant Secretary, Dr. R. Whitfield, Old Capitol, Jackson 113.

MISSOURI: Kansas City, Oct. 22-24. Ex. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct 5. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA:* Reno, Oct. 6. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, Oct. 20-23. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO:* Oct. 12-13, Santa Fe. Sec., R. C. Derbyshire, 227 E. Palace Ave., Sante Fe.

NEW YORK: *Examination.* New York, Syracuse, Buffalo and Albany, Oct. 6-9. Sec., Dr. Stiles D. Ercll, 23 South Pearl St., Albany.

NORTH CAROLINA: *Reciprocity.* Asheville, Oct. 12. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 6-9, 1954. *Reciprocity.* Grand Forks, Jan. 9. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, December. *Reciprocity.* Columbus, Oct. 6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OREGON:* *Reciprocity.* Portland, Oct. 16-17. Sec., Dr. Wilmot C. Foster, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia, January 1954. Acting Secretary, Mrs. Margaret G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, Oct. 1-2. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Reciprocity.* Columbia, Sept. 21. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 19-20, 1954. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE:* *Examination.* Memphis, Sept. 30-Oct. 1. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 12-14. Reciprocity applicants must be completed 30 days prior to the meeting date. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

WEST VIRGINIA: Charleston, Oct. 19. Sec., Dr. N. H. Dyer, State Office Bldg., Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, October. *Examination and Reciprocity.* Madison, Jan. 12-14, 1954. Sec., Dr. A. G. Koehler, 46 Washington Blvd., Oshkosh.

WYOMING: Cheyenne, Oct. 5. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, Sept. 15. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 6-7. Sec., Mr. Louis E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, Sept. 9-10. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

CONNECTICUT: *Examination.* New Haven, Oct. 10. Address: State Board of Healing Arts, 52 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 19-20. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 7. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, Oct. 13. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 9-10. Sec., Mrs. Ann Baker, 410 W. Allegan St., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 6-7. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis 14.

NEBRASKA: *Examination.* Omaha, Oct. 6-7. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA: *Examination.* Reno, Oct. 6. Sec., Dr. Donald G. Cooney, Box 9005, University Station, Reno.

NEW MEXICO: *Examination.* Santa Fe, Oct. 18. Sec., Mrs. Marguerite Cantrell, Box 1592, Santa Fe.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 4-5. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, Sept. 23-24. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis 3.

TEXAS: *Examination.* Dallas and Galveston, October. Sec., Bro. Raphael Wilson, 407 Perry-Brooks Bldg., Austin.

WISCONSIN: *Examination.* Madison, Sept. 19. Final date for filing application is Sept. 11. Milwaukee, Dec. 5. Final date for filing application is Nov. 27. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

* Basic Science Certificate required.

DEATHS

Boothby, Walter Meredith ✦ Albuquerque, N. Mex.; born in Boston July 28, 1880; Harvard Medical School, Boston, 1906; practiced surgery in Boston from 1909 to 1916; in charge of metabolism and respiration laboratories at the Peter Bent Brigham Hospital in Boston from 1913 to 1916; instructor in anatomy from 1910 to 1916 and lecturer on anesthesia at his alma mater from 1914 to 1916; entered the Mayo Clinic in Rochester, Minn., as head of the section on metabolism in November, 1916; later became an assistant professor in medicine, associate professor in medicine, and professor of experimental metabolism at the Mayo Foundation, where he organized the aeromedical unit for research in aviation medicine; became head of the section on aviation medicine and research at the Mayo Foundation in January, 1942; in August, 1948, was made an emeritus member of the staff, at which time he became guest professor engaged in research in aviation medicine at the Institute of Physiology, University of Lund, Sweden; in 1949 was named consultant to the Swedish Committee on Naval and Aviation Medicine; while abroad he also appeared as guest lecturer at the universities of Aarhus, in Denmark, and Oxford and Cambridge, in England; in 1950 joined the professional staff of the school of aviation medicine in Randolph Field, San Antonio, Texas, as research adviser, and later became associated with the Lovelace Foundation for Medical Education and Research as head of the respiratory laboratory; in 1952 was awarded the Order of the Commander of the North Star by the Crown of Sweden in recognition of his work in helping to establish an aeromedical laboratory in Sweden several years before; during World War I served with the American Expeditionary Forces in France for 22 months as captain and major in the medical corps; was assigned for the greater part of the time to the Gas Defense Service and was also at the front as chief of the surgical team for the St. Mihiel and Argonne battles; specialist certified by the American Board of Internal Medicine; an Associate Fellow of the American Medical Association and the Institute of Aeronautical Sciences; member of the Minnesota State Medical Association, American Physiological Society, American Society of Biological Chemists, American Society for Clinical Investigation, Society for Experimental Biology and Medicine, American Institute of Nutrition, American Society for Experimental Pathology, American Society for Pharmacology and Experimental Therapeutics, Central Society for Clinical Research, Association of American Physicians, Alumni Association of the Mayo Foundation, and Sigma Xi; one of the original fellows of the Aero Medical Association of the United States; fellow of the American College of Physicians and the American College of Surgeons; as joint recipient of the 1939 Collier Trophy, he was cited by President Roosevelt for his contribution to aviation medicine in general and research on pilot fatigue in particular; died July 4, aged 72, of acute coronary thrombosis.

Boys, Charles Edwards ✦ Kalamazoo, Mich.; born in Grenola, Kan., April 18, 1875; Northwestern University Medical School, Chicago, 1903; fellow of the International College of Surgeons and the American College of Surgeons; member of the House of Delegates of the American Medical Association from 1913 to 1929; veteran of the Spanish American War; during World War I a member of the city draft board and during World War II a member of the selective service area appeals board; formerly city health officer; affiliated with Borgess Hospital and the Bronson Methodist Hospital, where he died July 7, aged 78, of cerebral hemorrhage.

Glatt, Morris Arthur ✦ Beverly Hills, Calif.; born in Russia in 1890; Loyola University School of Medicine, Chicago, 1917; assistant clinical professor of otolaryngology at College of Medical Evangelists, Loma Linda and Los Angeles; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; formerly practiced in Chicago, where he was on the faculty of his alma mater, and affiliated with Illinois Eye and Ear Infirmary and Mount Sinai, Norwegian American, American, and Garfield Park Community hospitals; died in Temple Hospital, Los Angeles, July 19, aged 63, of cerebral hemorrhage.

Boland, Matthew Joseph ✦ Reading, Pa.; born in Harrisburg, Pa., March 23, 1904; Georgetown University School of Medicine, Washington, D. C., 1931; fellow of the American College of Surgeons; past president of the Berks County Medical Society; president of the Reading-Berks Tuberculosis and Health Association; served during World War II; formerly medical supervisor of parochial schools in Reading and a member of the Berks County Board of Public Assistance; chief of surgical service at St. Joseph's Hospital; died July 16, aged 49, of carcinoma of the right lung.

Wolin, David ✦ Rochester, N. Y.; Jefferson Medical College of Philadelphia, 1914; associate in pediatrics, University of Rochester School of Medicine and Dentistry; specialist certified by the American Board of Pediatrics; an Associate Fellow of the American Medical Association; member of the American Academy of Pediatrics; served during World War I; past president of the Rochester Pediatric Society; affiliated with Highland Hospital; served as consultant pediatrician at the Rochester General Hospital; died July 3, aged 61, of coronary occlusion and polycythemia.

Pettit, Roswell Talmadge ✦ Ottawa, Ill.; Rush Medical College, Chicago, 1913; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; served during World War I; in 1940 was appointed member of the advisory board, division of cancer control, Illinois State Department of Health; on the staff of the Ryburn Memorial Hospital; at one time medical director of the Ottawa Tuberculosis Sanatorium; died June 27, aged 68, of coronary thrombosis.

Arnett, James Horatio ✦ St. Petersburg, Fla.; Temple University School of Medicine, Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; died in Veterans Administration Center in Bay Pines May 22, aged 85, of encephalomalacia.

Arnold, Burt G., Bradenton, Fla.; Hahnemann Medical College and Hospital of Philadelphia, 1893; died May 20, aged 86, of coronary thrombosis.

Aubin, Alexander, Minneapolis; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Canada, 1902; died in St. Cloud, Minn., June 26, aged 80, of bilateral lobular pneumonia.

Bagwell, Barnum Williams ✦ Madisonville, Tenn.; Medical Department of Grant University, Chattanooga, 1904; died June 28, aged 79, of a heart attack.

Beckes, Norman E. ✦ Vincennes, Ind.; Medical College of Indiana, Indianapolis, 1897; served during World War I; for many years secretary of the city board of health; for four terms county coroner; affiliated with Good Samaritan Hospital, where he died June 19, aged 80, of pneumonia and pleurisy with effusion.

Bell, Carl Wendell, Raleigh, N. C.; College of Physicians and Surgeons, Baltimore, 1914; past president of the Raleigh Academy of Medicine; served in France during World War I; affiliated with Rex Hospital; died in Morehead City June 29, aged 65, of coronary occlusion.

Breitenbecher, Edward Robert ✦ Highland Park, Mich.; Detroit College of Medicine, 1907; on the staff of the Highland Park General Hospital, where he died July 5, aged 70, of cancer.

Briggs, Harry Arthur ✦ Albany, Texas; University of Texas School of Medicine, Galveston, 1913; died June 15, aged 65.

✦ Indicates Member of the American Medical Association.

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Bryson, Howard Russell, Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1898; died June 27, aged 80, of cancer.

Coate, Charles Rufus ✠ Whittier, Calif.; Medical College of Ohio, Cincinnati, 1907; died in Good Samaritan Hospital, Los Angeles, May 27, aged 75, of coronary arteriosclerosis.

Curll, Clyde Leslie ✠ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1902; served during World War I; on the staff of the South Side Hospital, where he died July 4, aged 79, of cerebral hemorrhage.

Dixon, Chester Darwin ✠ Santa Monica, Calif.; University of Nebraska College of Medicine, Omaha, 1926; served during World War II; on the staff of the Santa Monica Hospital; died April 11, aged 51, of myocardial infarction and arteriosclerosis.

Dougherty, William Sylvester ✠ Portage, Pa.; Jefferson Medical College, Philadelphia, 1914; served during World War I; affiliated with Mercy and Conemaugh Valley Memorial hospitals, Johnstown, died July 5, aged 67, of coronary occlusion.

Dunton, Harold Roy ✠ St. Albans, N. Y.; Long Island College Hospital, Brooklyn, 1904; died May 2, aged 71, of coronary thrombosis.

Eberhardt, Jacob Pope, Elberton, Ga.; Medical College of Georgia, Augusta, 1923; fellow of the American College of Surgeons; formerly affiliated with U. S. Public Health Service; died in Elberton Hospital July 1, aged 54, of cancer.

Eikenberry, Kenneth W. ✠ Lieut. (jg) U. S. Navy, retired, Los Angeles; University of California Medical School, San Francisco, 1932; entered the U. S. Navy in June, 1931, and retired May 1, 1937; on the staff of the California Hospital; died July 15, aged 47.

Ellis, Edwin Milton ✠ Ellsworth, Pa.; Jefferson Medical College of Philadelphia, 1901; died in the Mercy Hospital, Pittsburgh, May 14, aged 78.

Estrem, Carl O. ✠ Fergus Falls, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1907; fellow of the American College of Surgeons; surgeon, St. Luke's Hospital; consulting surgeon, Fergus Falls State Hospital; died June 5, aged 73.

Farrish, George Clayton ✠ Houston, Texas; University of Tennessee College of Medicine, Memphis, 1925; emeritus professor of clinical otolaryngology at Baylor University College of Medicine; died in St. Joseph's Hospital July 1, aged 58, of pulmonary embolism.

Foster, Robert Hale, Little Rock, Ark.; Creighton University School of Medicine, Omaha, 1906; member of the American Psychiatric Association; served on the staff of Central Louisiana State Hospital in Pineville, La.; died June 30, aged 71, of pneumonia.

Gibson, Ora James ✠ Cape Girardeau, Mo.; Washington University School of Medicine, St. Louis, 1933; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; affiliated with St. Francis and Southeast Missouri hospitals; died May 20, aged 53.

Hayes, Milton Emerson, Youngstown, Ohio; Medical Department of the Western University of Pennsylvania, Pittsburgh, 1895; formerly county coroner; affiliated with Youngstown Hospital; died June 26, aged 85, of renal insufficiency and carcinoma of the prostate.

Holloway, Luther William ✠ Jacksonville, Fla.; Tulane University of Louisiana School of Medicine, New Orleans, 1914; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; formerly vice-president of the Florida Medical Association; affiliated with St. Luke's, St. Vincent's, and Riverside hospitals; died May 7, aged 64, of cerebral hemorrhage.

Hollowell, Claude Velmont, Goldsboro, N. C.; Medical College of Virginia, Richmond, 1928; died June 13, aged 48, probably of heart failure.

Merrit, William Herbert ✠ New York City; New York Medical College, Flower and Fifth Avenue Hospitals, 1934; specialist certified by the American Board of Radiology; member of the American College of Radiology; affiliated with Boulevard Hospital in Long Island City, Mount Sinai Hospital, Montefiore Hospital for Chronic Diseases, Hospital for Joint Diseases, Beth Israel Hospital, and the Manhattan State Hospital; died July 4, aged 43, of heart failure.

Montgomery, Robert Russell ✠ Long Beach, Calif.; University of Toronto Faculty of Medicine, 1910; specialist certified by the American Board of Otolaryngology; member of the American Laryngological, Rhinological and Otological Society and the American College of Allergists; affiliated with Los Angeles County Hospital, the Queen of Angels Hospital in Los Angeles, and Long Beach Community and Seaside Memorial hospitals; died May 2, aged 68, of arteriosclerotic heart disease.

Moss, Maurice H., Miami Beach, Fla.; American College of Medicine and Surgery, Chicago, 1904; died June 17, aged 72, of coronary occlusion.

Palmer, C. Harold ✠ Portland, Ore.; University of Oregon Medical School, Portland, 1915; served during World War I; affiliated with Emanuel Hospital; died in Salem June 28, aged 62, of cerebral hemorrhage.

Pielemeier, Edward Frederick, Los Angeles; Kentucky School of Medicine, Louisville, 1894; Hospital College of Medicine, Louisville, Ky., 1895; died June 26, aged 89.

Pion, Philias Arthur ✠ Tuscaloosa, Ala.; University of Vermont College of Medicine, Burlington, 1916; affiliated with Veterans Administration Hospital; died June 28, aged 62.

Pressman, Abraham, Los Angeles; Temple University School of Medicine, Philadelphia, 1925 and 1932; formerly affiliated with the Indian Service; died May 20, aged 54, of acute coronary occlusion.

Robinson, John Ranson ✠ Van Nuys, Calif.; College of Physicians and Surgeons, Baltimore, 1901; member of the Oregon State Medical Society; formerly practiced in Portland, Ore., where he was affiliated with the Portland Sanitarium and Hospital; died June 22, aged 84, of myocardial infarction and arteriosclerotic heart disease.

Scott, Thomas Ewing ✠ Colonel, U. S. Army, retired, Tampa, Fla.; University of Nashville (Tenn.) Medical Department, 1907; entered the medical corps of the U. S. Army in 1912; served during World War I; retired Sept. 30, 1945; died May 21, aged 71,

Storch, Lewis A. E., Indianapolis; Medical College of Indiana, Indianapolis, 1891; died May 12, aged 84, of cerebral hemorrhage and chronic myocarditis.

Strang, David M., La Crescenta, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1907; died in Minneapolis June 14, aged 77, of coronary thrombosis.

Thabes, John Alois ✠ Brainerd, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; served as a member and president of the state board of health; fellow of the American College of Surgeons; on the staff of St. Joseph's Hospital, where he died June 29, aged 80.

Tyson, William Elisha Ellicott ✠ Detroit; University of Maryland School of Medicine, Baltimore, 1905; died June 18, aged 76, of myocardial infarction.

Waide, Arthur ✠ Scottdale, Pa.; Physio-Medical College of Indiana, Indianapolis, 1898; died in Henry Clay Frick Memorial Hospital in Mount Pleasant June 8, aged 77.

Wier, Frank Augustus ✠ Racine, Wis.; Ensworth Medical College, St. Joseph, Mo., 1904; died May 27, aged 74.

Williamson, Charles Hodge, West Union, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; died June 26, aged 75, of coronary thrombosis.

Wright, Paul, Dunsmuir, Calif.; Rush Medical College, Chicago, 1903; died June 25, aged 82.

GOVERNMENT SERVICES

ARMY

General Seeley Honored.—Brig. Gen. Sam F. Seeley has been awarded a certificate of commendation for his work at Walter Reed General Hospital (Army Medical Center) Washington, D. C. For the past four years he has been chief of that hospital's surgical service and director of the surgical division in the Army Medical Service Graduate School. The citation refers to him as "an able and strong administrator in directing and implementing the policies of a large, complex surgical service consisting of all the surgical subspecialties." General Seeley will leave soon for assignment to the Office of the Chief Surgeon, headquarters of the United States Army, Europe.

Institute for Hospital Administrators.—The seventh semiannual Inter-Agency Institute for Federal Hospital Administrators will be held at Walter Reed Army Medical Center, Washington, D. C., Oct. 26-Nov. 13, 1953, for hospital administrators of the Army, Navy, Air Force, Veterans Administration, Public Health Service, and Bureau of Indian Affairs.

Personal.—Col. Robert S. Anderson has been assigned as executive officer, medical section, Headquarters Second Army, Fort Meade, Md. Previously he served as professor of military science and tactics, Johns Hopkins University School of Medicine, Baltimore.

NAVY

Annual Symposiums in First and Fourth Naval Districts.—The third annual medicodental military symposium of the First Naval District will be held at the Naval Hospital, Chelsea, Mass., Oct. 12-14. Each subject will be presented by a speaker of outstanding prominence in the specialty concerned. Special sessions have been planned in medical, surgical, dental, and medical administrative fields.

The fourth annual medicodental military symposium under the auspices of the Commandant, Fourth Naval District, will be held Oct. 19-24 at the Naval Hospital, Philadelphia.

Point credits for both symposiums will be awarded eligible reserve medical department officers on the basis of one point for each day of attendance, provided sessions attended total more than two hours. Naval Reserve Medical Department officers desiring to attend either symposium should request duty orders, without pay, from the Commandant of their home naval district. Reserve medical department officers who are members of other branches of the armed forces desiring point credit for attendance must obtain authority and appropriate orders from their area commander, or Air Force Headquarters, to assure accreditation. Reserve officers will be required to register for each day's session by presenting themselves at the registration desk. Properly authenticated reports of attendance will be rendered to the appropriate branch of the armed forces.

Information about the first district symposium may be obtained from the Commanding Officer, U. S. Naval Hospital, Chelsea, Mass., and about the fourth district symposium from the District Medical Officer, Fourth Naval District, Building 4, U. S. Naval Base, Philadelphia 12.

Medical Casualties in World War II.—A revised compilation of the killed, wounded, and decorated personnel of the U. S. Navy Medical Department in World War II is currently being distributed to Navy medical department facilities and to larger medical libraries for reference purposes. The booklet lists 1,149 medical department personnel as having been killed in action. It lists by corps the name, rank, date, activity to which attached and the location of some 3,117 commissioned officers and enlisted personnel who were wounded in action. The booklet also contains 148 pages of medical department personnel who received the top 10 awards and the location of the act of gallantry for which the decoration was awarded.

Course in Naval Aviation Medicine.—The next class in Naval aviation medicine will convene at the School of Aviation Medicine, Pensacola, Fla., Oct. 5, 1953. The course is of about six months' duration, and candidates successfully completing the course will be designated as Naval Flight Surgeons. The class will be limited to 30 medical officers of the Regular Navy and Reserve of the rank of lieutenant commander and below. The Bureau of Medicine and Surgery says there is an urgent need for Flight Surgeons in the air arm of the Navy, and eligible medical officers are requested to consider this growing field of medicine as a specialty for their career. Duty with aviation units affords general medical practice in addition to opportunities for practice in various specialty fields including otolaryngology, ophthalmology, physiology, psychiatry, and research. Medical officers desiring to enroll should apply to the Chief of the Bureau of Medicine and Surgery (Aviation Medicine Division) and should include in the request the following agreement of obligation: "I agree to remain on active duty for one year following completion of the course or for six months beyond my obligated service, whichever is longer."

AIR FORCE

French Medals Awarded.—The highest award of the French Air Force Medical Service, a gold Medal of Honor, has been presented to Major Gen. Harry G. Armstrong, Surgeon General of the U. S. Air Force. At the same time Brig. Gen. Otis O. Benson Jr. was awarded a Medal of Honor of the second class. Similar decorations also went to Brig. Gen. William J. Kennard of SHAPE headquarters and to Col. George B. Green, medical assistant to the air attaché in Paris. The presentations were for assistance rendered by all four officers to aviation medicine in France. It is the first time that the top decoration for aeromedicine in France has been given to an officer of any other nation.

Careers in Aviation Medicine.—The advanced class in aeromedicine of 10 medical officers graduated at the School of Aviation Medicine, Randolph Field, Texas, July 18. The class was a select group chosen for training in the more advanced techniques of aviation medicine. They are surgeons who wish to make a career of this specialty. Six have received orders assigning them to Johns Hopkins University in Baltimore for a further year of study. Three are rated Air Force pilots as well as doctors of medicine, who have taken their second year at Johns Hopkins. They are being assigned to the Tactical Air Command for residency training in aviation medicine.

Graduation at Air Force School.—On August 14 at the Air Force School of Aviation Medicine, Randolph Field, Texas, 115 student officers graduated. Col. Walter A. Carlson, surgeon of the Air University Command, of which the School of Aviation Medicine is a part, delivered the graduation address. A background of medical experience distinguishes the class. Major John A. Schilling, who will remain at the school as head of the department of surgery, was a former assistant professor at the University of Rochester. Capt. James P. Hammersten, also assigned to the school to head the department of internal medicine, was an assistant professor at the University of Minnesota. Capt. Edward A. Tyler taught at the University of Pittsburgh and Lieut. Leon O. Banks at Howard University. Ten of the officers have done research in various fields of medicine. More than half of those graduating had conducted their own medical practice before they entered the Air Force.

Personal.—Col. Robert J. Benford (MC), U. S. A. F., editor of the *U. S. Armed Forces Medical Journal*, will be the official representative of the Department of Defense at the fourth annual meeting of the medical editors of the world at The Hague, Sept. 7. He will also attend the interim meeting of the Aero Medical Association in Brussels, Sept. 24-27.

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FOREIGN LETTERS

BRAZIL

Nontraumatic Perforation of Common Bile Duct.—Drs. Plinio Bove and Roberto Millan of the Hospital das Clinicas, São Paulo State University, reported (*Revista Hosp. clin.* **8**:93, 1953) a rare case of spontaneous perforation of the common bile duct with retrocholeperitoneum and acute pancreatitis. The patient, a young woman of 21, was not aware of any trauma, and there had been no surgical operation. No stones were found on cholangiographic examination or at the operation. For some years she had had dyspeptic disturbances and right upper quadrant pains. In the last crisis, signs of peritoneal involvement appeared that led to emergency surgery. During the operation, it was possible to see a linear perforation of the common bile duct near the duodenum. The common duct was thick-walled and moderately dilated, and its mucosa showed hemorrhagic foci. A T-tube was placed in the perforation. In the postoperative course it was possible to recognize a common channel with pancreatic reflux (cholangiography) and biliary reflux (mecholyl-morphine test). There was also chronic inflammation of the common duct and the sphincter of Oddi. Cholecystectomy was done later. The biliary drainage through a Kehr catheter was maintained for 40 days, and the patient received large amounts of penicillin. In spite of this treatment the previous symptoms (pains and dyspeptic disturbances) did not disappear. This fact suggests that infection was not the principal etiological agent.

The authors believe that the main cause of this biliary disease and also of the acute pancreatitis and common duct perforation was the inflammatory process of the terminal part of the common duct. The postoperative examination by means of cholangiography and the mecholyl-morphine test showed biliary and pancreatic reflux through the papilla of Vater, causing the irritation of the epithelium by the eventual transformation of the trypsinogen into trypsin. This irritation, associated with the spasm of the sphincter of Oddi, may have led to the perforation of the common duct. They also believe that reversal of the inflammatory changes of the sphincter of Oddi, papilla of Vater, and the terminal part of the common duct may be obtained by delayed common duct drainage in about 50% of cases. When this treatment fails, incision of the papilla of Vater is the only way to obtain a complete recovery.

Mucocutaneous Leishmaniasis.—Dr. Julio Muniz of the Oswaldo Cruz Institute recently reported in *O Hospital* (**43**:1, 1953) the results of his experimental studies with the so-called Calle strain of Leishmania brasiliensis. This is supposed to differ from the variety reported by Dr. Barrientos who observed in Bolivia the patient from whom the material was taken. Dr. Nery Guimarães described a similar case of nodulotumoral leishmaniasis that he observed in the Amazon region of Brazil; the patient harbored a strain of the same parasite, which Dr. Guimarães also considered to be a different variety.

Muniz believes that these observations illustrate the complexity of the problem of determining the causative agents of mucocutaneous leishmaniasis in man, although a great advance was made through the demonstration that the parasite causing visceral as well as cutaneous leishmaniasis in dogs is the same that produces the disease in man.

Agglutination of "Free-Living" Endamoeba Trophozoites by Human Serum.—The agglutination of "free-living" amebas has been studied by Zaubitzer (1901), Sellard (1911), Coca (1912), von Schuckmann (1920), and Heathman (1932), who tried by this means to distinguish different genera and species. To attain this aim they immunized animals through the inoculation of amebas by peritoneal or venous routes, and using the animals' serums attained various and in some cases contradictory results. The available medical literature does not contain references to the agglutinating power of human serum on "free-living" amebas, however. Drs. A. Azzi Leal and Dacio F. Amaral, of the School of Hygiene and Public Health of the São Paulo State University, reported (*Arq. Fac. hig. e saúde púb. Univ. São Paulo* **6**:1, 1953), that trophozoites from cultures of Endamoeba moshkovski (a "free-living" ameba) were agglutinated by undiluted normal human serum, the agglutination being followed by the disintegration of the amebas in 15 to 45 minutes. With inactivated serum, the agglutination was observed in titers of from 1:20 to 1:320. When the material was kept in a refrigerator for 24 hours, the agglutination increased and appeared in cases in which it had been negative. No association was found between this agglutination and the presence of E. histolytica in the feces of the donors of serum. Comparing the present results with those of an investigation by the same authors (1952) in which they studied the action of the same serums on trophozoites of E. histolytica, they observed the following facts: 1. Active human serum has a disintegrative effect on both amebas. 2. The inactivated human serum agglutinates the "free-living" amebas in higher titer (1:20 up to 1:320) than E. histolytica (1:1 up to 1:40). 3. The agglutination of E. moshkovski persists and increases after 24 hours if the slides are kept at room temperature, in a refrigerator at 2 to 8 C, or in an incubator at 37 C, while under identical conditions the trophozoites of E. histolytica are destroyed.

Human Hymenolepiasis.—Dr. Dacio F. Amaral, of the School of Hygiene and Public Health, São Paulo State University, reported recently an investigation in which he stressed the importance of Hymenolepis nana in digestive abnormalities. After reviewing the cases of human parasitism by H. diminuta found in the medical literature of Brazil, he describes his work at the penitentiary of the state of São Paulo. In this study he examined the stools of 592 inmates, six times each during a period of 20 days, by the zinc sulphate flotation method. H. nana was found in 11 of the inmates, or 1.86%. The finding of H. nana in the stools was very irregular, since the first examination of the 592 subjects revealed four cases, the second examination two more cases, the third and fourth one more each, the fifth two more, and the sixth one more. In view of such irregularity, it is not known whether more tests would disclose still more cases. It is pointed out that this fact must be kept in mind if one desires to determine the exact efficiency of drugs against that worm. Results are presented of treatment of hymenolepiasis due to H. nana with chloroquine and gentian violet, showing that they were not satisfactory.

JAPAN

Yoshida Sarcoma and Free Cell Tumors.—Dr. Tomizo Yoshida, professor of pathology, department of pathology, University of Tokyo Medical School, has been awarded the Imperial Prize of the Japan Academy for 1953. The award was given at the annual assembly on May 17, in the presence of his Majesty Emperor Hirohito at the Amphitheater of the Japan Academy, Ueno Park, Tokyo. Professor Yoshida was thus honored for his contribution to the study of the peculiar type of sarcoma of the rat now called the Yoshida sarcoma, following the proposal made at the annual meeting of the Japanese Cancer Association in 1948. In the years since his discovery in June, 1943, over 30% of the cancer literature in Japan has been concerned with this tumor, an indication of its significance.

The tumor is characterized by the ability of its cells, when suspended in fluid as individually separate free cells, to proliferate in the abdominal cavity of the rat. They infiltrate

The items in these letters are contributed by regular correspondents in the various foreign countries.

at the same time into surrounding tissues, resulting in massive growth that causes the death of the host in an average of 40 days.

This was first discovered in one of the 20 rats fed with o-aminoazotoluol (a carcinogenic substance discovered by Sasaki and Yoshida), followed by painting with arsenite of potassium solution on the back three times a week. Toward the end of the sixth month of the experiment a tumor was found in the scrotum; it grew rapidly within one month and was about to become ulcerated. The animal was killed on June 28, 1943, and a malignant growth was found to be widely infiltrating through the pelvic cavity to retroperitoneal tissues. In the peritoneal cavity there was a thick, milky ascitic fluid that was actually a suspension of the tumor cells. The ascitic fluid was successfully transmitted into the peritoneal cavity of normal rats.

Although Loewenthal had previously reported in 1932 a similar tumor (Ehrlich's "Ascites-Krebs"), the interest of scientists in fluid of free cell tumors actually resulted from the independent and well-controled studies of Yoshida.

Serial transplantation of the Yoshida sarcoma is performed by using a glass capillary tube, which is also useful for obtaining the tumor fluid. One droplet of the fluid is sufficient for cytological observation. The tumor fluid contains 0.5 to 1 million tumor cells per 0.001 ml. For transplantation 0.01 to 0.05 ml. of fluid containing 10 to 50 million cells is routinely used. The exact number of tumor cells in the inoculum of the Yoshida sarcoma can be easily determined by the method of counting blood cells.

Yoshida and his co-workers finally found that a single tumor cell was enough for successful transplantation. The tumor fluid was diluted until each droplet contained only one or no tumor cell. After microscopic confirmation that a droplet contained only one tumor cell, the droplet was sucked into a micropipet by means of a micromanipulator and then was blown into the peritoneal cavity through the punctured abdominal wall. The single cell transplantation was tried 125 times and was successful in 69 animals. It should be emphasized that results of all attempts using materials microscopically free from tumor cells were negative.

Mitotic forms are frequently found in smears of the Yoshida sarcoma. Each stage of cell division may be easily observed. The chromosome studies of the Yoshida sarcoma cells have been performed by Yoshida's co-workers and zoologists in this country. The number of the chromosomes varies fairly widely but 42 chromosomes, the regular number of rat germ cells, is also the most frequent number, with fluctuation between 32 and 50.

By the phase-contrast microscope it was possible to observe the entire course of a mitotic division in vitro. The average length of time for complete mitosis was approximately an hour or slightly less. The full process of mitosis of the Yoshida sarcoma has now been brought to easy observation by motion pictures taken by his research group.

The Yoshida sarcoma is most suitable for study of tumor chemotherapy, because (*a*) the cytological response can be easily, exactly, and repeatedly examined, thus serving as an indicator of the efficacy of chemicals, (*b*) direct effects of chemicals upon the tumor cells can be observed by intraperitoneal administration of materials to be tested, and (*c*) the rate of successful transplantation is as high as about 95% and the fluctuation of the life span of the tumor-bearing rats is relatively small, thus enabling easier observation of the effects.

Dr. Yoshida checked numerous compounds in collaboration with Prof. Morizo Ishidate, department of pharmacology of Tokyo University. So far nitrogen mustard and its derivatives are of the most interest in this respect. In an effort to lower the toxicity of nitrogen mustard, the N-oxide derivative of the substance was prepared; it is hydrophilic and far less toxic. The new compound was tested carefully by animal experiments and in patients with various kinds of cancer. As far as animal experiments go, it is one of the hopeful remedies. It is now provided for general use under the name of Nitromin.

The influence of Yoshida's discovery upon tumor research in Japan is limitless. It is no exaggeration to state that all aspects of tumor biology have been reinvestigated with this sarcoma: Transplantability in various strains of rats and animals of different species, histological and immunologic reactions involved in transplantation, correlations between hereditary constitution of rats and development of tumor, transplantability to chick embryo, behavior in tissue culture, respiration and glycolysis, resistance to x-rays, supersonic waves and other physical agents and all kinds of chemical substances, changes in enzymatic actions and serum protein in the sarcoma-bearing animals, cytochemical researches of the sarcoma cells, nucleic acid content of the fluid and tumor cells, paper-chromatographic studies of the tumor fluid, radioautography of the tumor fluid, radioautography of the tumor cells, and so on.

Some scientists outside Japan became keenly interested in the Yoshida sarcoma, and the samples are now maintained in the National Cancer Institute, Bethesda, Md., in Sweden and Germany. Professor Yoshida was a guest speaker of the Gorden Conference on Cancer held in New London in 1951. Dr. Yoshida and his associates are now extending their study to other types of free cell tumors and have already obtained a specimen from an experimental hepatoma of the rat.

PARIS

Psychic Disorders During Isoniazid Therapy.—On March 6, at the meeting of the Medical Society of the Paris Hospitals, R. Benda, P. Kaufmann, and J. F. Buisson reported three cases in which psychic disorders occurred between the second and the sixth weeks of treatment with isoniazid. They also noted in other patients treated with this drug some alteration of the electroencephalogram not associated with any psychic or neurological disorder. Marquezy stated that he noted a hypomanic reaction in two children who were given very large doses of isoniazid; the reaction subsided when the size of the doses was decreased. Fouquet also noted a hypomanic reaction in a man with a previous history of psychopathology after only eight days of treatment. Peron noted euphoria and excitation in some patients, and he believes that these reactions are almost identical with those observed in response to cortisone. Paraf assumed that isoniazid probably affects the diencephalon. To the contrary, Ravina contended that isoniazid has no specific action. Duroux reported on two alcoholic patients who experienced a deep disgust for alcohol after treatment with isoniazid. R. Benda and associates commented on the complexity of the problem and drew attention to the recently published work of Prof. J. Delay and associates on the favorable effect of isoniazid in patients with depression or melancholia. Therefore, caution should be observed in giving this drug to patients with a history of psychological disorders.

Studies on the Stomach.—Chiray, J. Sénèque, and S. Doubrow presented to the National Academy of Medicine an original paper on stomach pathology. In this paper, they drew attention to the histophysiological pecularity of this segment of the digestive tract. Because of their experiments, they considered the pathology of the stomach according to the action of large molecules of disintegrated albumins that penetrated the antral mucosa. According to the authors, there exist three possibilities: The first is that the large molecules, acting as reactogens, exert an influence only on the sympathetic elements of Meissner's plexus and on Auerbach's plexus, thus provoking mucosal erosion. Second, the sensitization may be restricted to the antrum itself, which might cause an ulcer following an initial Arthus' phenomenon. A third possibility is that the large molecules may provoke an endothermal reaction in the heterotopic cells, which may be the origin of an action affecting the chromosomal apparatus. This reaction may result in the beginning of development of malignancy. The authors stressed that much research is in progress in this field.

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Fiftieth Anniversary of the Grancher Foundation.—The 50th anniversary of the Grancher Foundation was celebrated at the Pasteur Institute by many leaders in the medical profession. Courcoux, J. Renaults, and Armand Delille stressed the important part played by the phthisiologist Grancher in the antituberculosis struggle. The aim of the Grancher Foundation is to isolate children in good health from their tuberculous parents and to place them in the country. Every year it places 6,000 children and has branches in all departments of France. Since 1948 all children cared for by the foundation have been vaccinated with BCG. Lately, this foundation has become one of the centers for placing children who must be isolated after vaccination with BCG.

SWEDEN

Obstetric Deliveries in Hospital or at Home.—During the past two decades, a profound change has taken place with regard to the number of deliveries in hospitals and at home. At present only about 5% of all deliveries occur in the mothers' homes, whereas this was the case with about 75% 20 years ago. These figures reflect a trend that has provided the country with a network of 236 institutions ranging from fully equipped maternity and gynecologic hospitals to cottage hospitals and comparatively primitive centers in which women can be confined. Discussing this state of affairs, Dr. Ludvig Simon of the County of Norrköping reproduces several tables in *Svenska Läkartidningen* for May 29, 1953. One of the tables is concerned with the two year period 1950 through 1951. This table shows how the 222,460 confinements throughout Sweden were distributed according to whether they were at home (12,137) or in one or another of the five different types of maternity hospital. The maternal mortality was 0.069% (69 per 100,000), a record judged by international standards. The total infant mortality associated with pregnancy and confinement was 3.1%.

With these and other figures for his background, Dr. Simon raises the question: "Should an effort be made to raise the confinements in hospital from the present 95 percent to a 100 percent or should the 5 percent confinements at home be left unchallenged?" He is emphatically in favor of the former alternative, and he argues that the old system, with midwives attending mothers in their own homes, is a snare and a delusion. It may be all very well in a town where, if matters go badly at home, the expectant mother can be rushed to hospital at the last moment, but, in a thinly populated and wide area like Lapland where a journey from the mother's home to a hospital may take days, the maintenance of the old midwife system may tempt a prospective mother to remain at home for her confinement. If she knew that no provision was made for her confinement at home, she would be forced to travel to a maternity hospital soon enough for her confinement. Dr. Simon has scrutinized the conditions under which 38 confinements took place at home in the County of Norrköping in the period between 1948 and 1951. In only eight of these did the confinement take place under satisfactory economic and housing conditions. In 14, the expectant mother could not leave home because she could not get anyone to take her place there. In four others, the mothers were confined before a midwife could reach them.

Association of Bronchiectasis with Asthma.—Though certain textbooks have contained the statement that bronchiectasis is common in association with asthma, impairing the prognosis for it considerably, reliable data on this point seem to be conspicuous by their absence. Lack of systematic bronchographic examinations of asthmatic patients may well be responsible for ignorance in this matter, and, to repair it, Dr. N. Westermark and Dr. S. Wiholm of Stockholm have undertaken bronchographic examinations of 100 consecutive patients with bronchial asthma treated at the St. Göran's Hospital since 1949. The Westermark technique was followed; about 10 ml. of iodized oil (Lipiodol) was introduced after the pharynx and larynx had been anesthetized. Most of the patients had had asthma for more than 5 years, 47 of them for more than 10 years. In 18 cases, there was a history of pneumonia once or oftener, and 21 patients had had sinusitis. As many as 70 had yielded, or still yielded, purulent sputum, but genuine chronic bronchitis was present in only 5. Only in four patients was bronchiectasis demonstrable, and in each one the lesion was comparatively small, much smaller than the large and extensive lesions existing when bronchiectasis gives rise to serious symptoms. These observations suggest that asthma does not as a rule predispose the patient to the development of bronchiectasis and that the association of one disease with the other is comparatively rare. Yet in 1938, Watson and Kibler found that 90% of their patients with bronchiectasis also had asthma.

Notification of Certain Forms of Cancer in 1953.—It is hoped that Sweden will take an active part at the meeting to be held in Washington in September, 1954. The meeting has been called by the Société Internationale de Pathologie Geographique to discuss the behavior of cancer of the uterus, breasts, lungs, stomach, and liver. Professor Folke Henschen of Stockholm, the secretary of the Swedish National Committee dealing with this matter, has issued an appeal to all his colleagues to take an active part in collecting the necessary data. This committee is composed of 12 clinicians, 9 pathologists, 2 veterinary surgeons, and 3 statisticians and is presided over by Professor E. Sjövall. Physicians in Sweden have received from the Swedish Ministry of Health a questionnaire concerning the new cases of cancer diagnosed for the first time in 1953 in the above-mentioned organs. When completed these questionnaires are to be sent to the Radiumhemmet in Stockholm where they will be registered and checked to avoid duplication. The registration of cases of cancer of the liver will be undertaken by the physicians who have performed postmortem examinations. The inclusion of cancer of the liver, a rare disease in the Scandinavian countries, stresses the international character of the forthcoming meeting in Washington, for there are many subtropical and tropical countries in which this form of cancer is very common. The notification of certain forms of cancer is the first step taken in this direction in Sweden, and it may well lead to a more elaborate system of notification in the near future. In this respect, a stimulating example has already been set in Denmark where a cancer register has been dealing with all forms of cancer on a national scale for many years.

Anthropological Tests of Paternity.—Until quite recently, the only biological and laboratory test of paternity recognized by Swedish law was the blood group test. In 1949, legislation was adopted allowing the admission of certain anthropological data as evidence in disputed cases of parenthood. This law became operative at the beginning of 1950 and promises to help considerably in determining parenthood in doubtful cases. The Swedish State Institute for Human Genetics (Statens Rasbiologiska Institut) at Uppsala is often called on to give evidence in this field, and already it has provided useful information to the law courts in approximately 10 to 15% of the cases referred to it. In an account of the work of this institute in *Nordisk Medicin* for May 22, 1953, Dr. Jan A. Böök is very cautious in his estimate of the value of anthropological data in such cases. For, at present, the special anthropological studies of the Swedish population necessary for a well-balanced judgment in a given case have yet to be made. When they have, it would, in his opinion, be possible to give complete and categorical answers in most cases. Even now anthropological data, such as the color of the irises of the child, the mother, and the potential father, may clearly show which is the real father when the blood group test has left the matter in doubt. On this particular point Dr. Böök notes that at the institute no case has yet been found of a brown-eyed child being born to parents both of whom are blue-eyed. In his experience, a child must be at least 2 years old if it is to provide all the necessary anthropological data required in a disputed case.

CORRESPONDENCE

STORING AMPULS FOR SPINAL ANESTHESIA

To the Editor:—Utmost care must be taken to prevent contamination of any solution used for spinal anesthesia. Spinal anesthetic drugs are prepared in sealed ampuls and are usually sterilized by storage in a container of antiseptic solution. Severe neurological complications have been reported resulting from contamination of the anesthetic solution by the antiseptic (Nicholson, M. J., and Eversole, W. H.: *J. A. M. A.* **132:**679 [Nov. 23] 1946). This can occur if a very small crack is present in the ampul and should be detected at once. Steinberg reemphasized this danger and suggested storage of ampuls in thimerosal (Merthiolate) so the color contamination could be noted (*Anesthesiology* **11:**257 [March] 1950). Different coloring agents have been tried, and all work on the principle of antiseptic contamination giving the defective ampul a slight tint of the same color used in the antiseptic solution.

At the Massachusetts General Hospital a solution is prepared that contains fluorescein dye. It is brightly colored, but on long storage the outside of the ampul becomes stained and contamination of the contents cannot be detected until the solution is drawn into a syringe. It was believed that an indicator solution could be found that would give the contaminated ampul a color different from the color given the sterilizing solution. Preliminary tests with several indicators showed that the pH of the agents commonly used for spinal anesthesia was lower than 5.4. From the table of indicator solutions in a handbook of chemistry and physics it appeared that methyl red would change in the desired range. A test sterilizing solution was made from 95% ethanol and a saturated alcoholic solution of methyl red (pH 4.2—pink and pH 6.2—yellow) was added drop by drop until the solution was bright yellow, about a 1% solution. A trace of this sterilizing solution added to each ampul tested gave it a definite pink or red color.

Following are the spinal anesthetics that this indicator colors red: procaine hydrochloride 20%; procaine 1% and ephedrine 5%; dibucaine (Nupercaine) hydrochloride 0.25%, with dextrose 5%; piperocaine (Metycaine) hydrochloride 20%; procaine hydrochloride (Novocaine) 1%; tetracaine (Pontocaine) hydrochloride 1%; and dextrose 10%. The following vasopressors were also colored red by the sterilizing solution: methoxamine (Vasoxyl) hydrochloride; epinephrine (Adrenalin) chloride 1:1000; and phenylephrine (Neo-Synephrine) hydrochloride 1%. Ephedrine sulfate does not have a low enough pH for this indicator and takes the same color as the sterilizing solution. Ethanol, 95%, is not a solution for sterilizing ampuls, but this principle will work in any sterilizing solution used, as long as the pH is 6.2 or above or can be so adjusted by addition of sodium hydroxide.

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MYOCARDIAL INFARCTION

To the Editor:—For some years, it has been the teaching of eminent clinicians that the beginning of myocardial infarction coincides with the onset of acute symptoms. The literature refers to "silent infarcts" (*Am. Pract.* **4:**64 [Oct.] 1949), but there is little consideration of cases in which there was eventual development of the characteristic clinical picture.

During a recent pathological study of coronary disease with Dr. J. B. Miale, I observed an interventricular septal rupture one day after onset of the acute coronary occlusion syndrome, recalling a similar case reported by Geckeler (*J. A. M. A.* **148:**1413 [April 19] 1952). Both Geckeler and Oblath, Levinson, and Griffith (*J. A. M. A.* **149:**1276 [Aug. 2] 1952) admit that well-developed myocardial necrosis is prerequisite to such rupture. According to Mallory, however, infarction necrosis of heart muscle is not well-established until the fourth day. From our own series of 84 cases, we selected the 24 hearts containing infarction more recent than the fibrotic stage. Of these, seven hearts (29%) had infarcts significantly older than the clinical histories would indicate; the discrepancy varied from two days to three weeks. Only one of the seven had myocardial damage too extensive to be compatible with recovery, and much of this was successive infarction chronologically parallel to hyperactivity of the patient. One patient had extracardiac illness that caused death, and one died of thromboembolic complications. In five there were premonitory symptoms that were not incapacitating and did not cause enough professional alarm to initiate the treatment and care usually given in cases of suspected myocardial infarction.

Out of these findings, there arise cautions that no practicing physician can afford to ignore: 1. In the patient who has had previous cardiac symptoms and who has learned to live with them in a reassured fashion, the differential recognition of chronic and acute symptoms is often obscured. 2. Myocardial injury occurring as a complication of some other illness that commands primary attention, is more likely to escape full awareness, even on the part of the clinician. For example, Wroblewski and LaDue have recently mentioned the notable absence of precordial pain in some patients suffering myocardial infarction after major surgery (*J. A. M. A.* **150:**1212 [Nov. 22] 1952). 3. Even in patients without other illness or previous coronary episode, the beginning of infarction may antedate acute symptoms by several days. Obviously, in a patient with any indications of myocardial ischemia or any of its predisposing factors, a higher index of suspicion of myocardial injury is warranted. Thus, if a patient seen supposedly at onset of the coronary occlusion syndrome is treated with the precautions that would be used for persons in the full danger stage of myocardial necrosis, complications and death may be avoided. Also, premonitory or "chronic" coronary symptoms appear worthy of more consideration than is often thought necessary.

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BULBAR POLIOMYELITIS

To the Editor:—The letter in the June 20, 1953, issue of The Journal (page 757) by Dr. Frank concerning the effectiveness of a well-planned approach to the management of patients with bulbar poliomyelitis deserves commendation for its clarity. At this time when we are faced with the seasonal increase in poliomyelitis, Dr. Frank's letter and the report of several thousand treated cases to which he refers (Bower, A. G., and others: A Concept of Poliomyelitis Based on Observations and Treatment of 6,000 Cases in a Four-Year Period, *Northwest Med.* [Feb., March, and April] 1950) should be required reading for all physicians treating poliomyelitis patients. The deleterious effect of hypercapnia should be well understood by both nurses and physicians.

Lest physicians in smaller communities be deterred from using the apparently complex laboratory aids outlined in Dr. Frank's letter, I wish to inform other physicians of the relative ease with which a program of laboratory guides was established in a small community hospital (Memorial Hospital of Sheridan County, Wyoming) in 1952 and to emphasize the practical value of the laboratory determinations that helped us in the management of bulbar poliomyelitis in accordance with principles outlined by Dr. Frank. Another value of such a program is the renewal of interest by other physicians in the community in the diverse metabolic disturbances in poliomyelitis and, after the poliomyelitis season, in a variety of other clinical conditions.

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COUNCIL ON MEDICAL SERVICE

MATERNITY AND INFANT CARE PROVISIONS FOR SERVICEMEN'S DEPENDENTS

Genevieve W. Carter, Ph.D.
Emanuel Reznick, M.A.
and
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The abstract of part 1 of the study concerned with providing medical, hospital, and related services to the wives and dependents of servicemen appeared in THE JOURNAL, *June 7, 1952, page 597. Following is an abstract of part 2 of this continued study under the joint sponsorship of the Welfare Council of Metropolitan Los Angeles and the American Medical Association. This study was part of a comprehensive project from which facts were obtained as a basis for making recommendations to help solve this particular problem in medical service. The report, including the above mentioned recommendations, by the Council on Medical Service appeared in* THE JOURNAL, *June 20, 1953, page 758.*—ED.

Application of research methods for the purpose of determining the pattern of community utilization of medical services is a recent field of endeavor in the long history of medical research. This abstract presents a summary of a research project on uses and costs of medical services. The study was conducted in two parts and originally was initiated for study of the need for an emergency maternal and infants' care program such as the one in operation during World War II.

The interest in this subject, locally as well as nationally, grew out of concern that, with the great increase in the number of persons in our armed forces, some kind of special program might be indicated for meeting the medical needs of dependents. There was a developing interest in special federal assistance to provide maternal and infant care for servicemen's dependents and considerable speculation as to the extent of need for medical care assistance among dependents.

This study, as well as the first one, was jointly financed by the American Medical Association and the Welfare Council of Metropolitan Los Angeles. Both studies were directed toward investigating the nature of the problems encountered by servicemen's wives when they were seeking and utilizing maternal and infant care services. The data for part 1 were secured through interviews with servicemen's wives residing in Los Angeles County who delivered during a selected week in January, 1952. These women were interviewed in a total of 89 hospitals and maternity homes. In a small number of cases, the interviews took place in the women's homes shortly after delivery.

Experience gained in the first study led to a clarification of the concept of need. Conclusions that describe the needs for medical care in general terms cannot serve to point up specific patterns of medical service that might be developed to alleviate the need. When need is expressed in terms of the nature of the problems or difficulties encountered when seeking and utilizing medical services, however, the data obtained can readily be translated into remedial measures.

DESIGN OF THE STUDY

The universe for part 2 was the total number of servicemen's wives living in Los Angeles County who delivered during the month of August, 1951. Most of these women delivered in hospitals located within the boundaries of Los Angeles County, but some delivered in hospitals in adjacent counties and as far away as San Diego.

From the Research Department, Welfare Council of Metropolitan Los Angeles.

1. Carter, G. W.; Reznick, E., and Roman, G.: Maternity and Infant Care Provision for Servicemen's Dependents, Publication No. 13, Research Department, Welfare Council of Metropolitan Los Angeles, 1952, pp. 5-9.

The seven months intervening between the time of birth (August) and the study period (March and April) allowed for the inclusion in Los Angeles County Vital Statistics of the out-of-county births. From the universe of 286 cases, a 25% stratified random sample was selected. Visits were made in a total of 129 cases, yielding 71 completed interviews. It was anticipated that some of the women selected for interviewing would have left the area and would not be traceable. Therefore, it was necessary to construct a sampling method [1] that would allow for substitution of cases similar in essential characteristics to the lost cases. In order to get such cases it was necessary to stratify the population in terms of criteria demonstrably related to the problem under observation, i. e., in terms of problems encountered by servicemen's wives in seeking and utilizing maternity and infant care. These criteria were selected through analysis of the cases included in part 1 of the study.

An interview schedule was constructed and tested in a pilot study. Major categories covered were (1) general information on social situation of the family; (2) information on prenatal care; (3) information on hospitalization; (4) financial costs and methods of payment for prenatal, delivery, and hospital care; (5) attitudes regarding medical care and financing; (6) postpartum care; and (7) pediatric care.

TABLE 1.—*Pattern of Resources Used by Seventy-One Women in the Sample, Los Angeles, August, 1951*

Facility Used	Type of Care: Prenatal Care, %	Hospital Care, %	Post-Partum Care, %	Pediatric Care, %
1. Private Physician	54.9%	....	64.8%	43.7%
2. Private Hospital	4.2	63.4%	5.6	0.0
3. Military Facility	14.1	14.1	14.1	8.4
4. County or City Facility	12.7	22.5*	11.3	15.5
5. Combined Military and County or City Facility	1.4	....	....	1.4
6. Combined Public † Facility and Private Physician	11.3	....	0.0	28.2
7. No care	1.4	....	4.2	2.8‡
Total	100%	100%	100%	100%

* One of these women delivered twins.
† Public here includes military, county, and city facilities.
‡ One baby died three days after birth.

SUMMARY OF FINDINGS

Analysis of the data revealed three problems generally felt and expressed by the women. These problems were not equally distributed but recurred often enough for them to be considered general in the population. They were (1) financial difficulty, (2) the distance to medical facilities, and (3) lack of knowledge of community services.

Interestingly, lack of maternity medical care was not a problem for servicemen's wives in the Los Angeles area; 91.6% of the sample received prenatal care, hospitalization, and postpartum care and their infants received pediatric care. The amount of care was generally high, and care was received for the first time early in the course of the pregnancy.

Three types of facilities were available and used to varying degrees, (1) private; (2) military; (3) city or county. Table 1 shows the pattern of resource use.

1. THE PROBLEM OF FINANCIAL DIFFICULTY

In a sense, the problem of financial difficulty was a consequence of obtaining care. Since the women received care, it was necessary that they or others assume responsibility for payment. Financial difficulty was defined as (1) choice of a particular type of care for financial reasons rather than for expected standard of care and/or (2) response of yes to a question such as "Would you say you felt financial hardship during this period?" A total of 66.2% of the women satisfied one or both of these criteria in regard to hospital care, and 62% in regard to prenatal care.

The expressions of financial difficulty had as their background the monthly income available and costs of maternity care. Table 2 shows the distribution of monthly incomes available [2]; 67.6% of the women received monthly incomes of $150 or less.

TABLE 2.—*Monthly Income Available During Prenatal Period for Seventy-One Women in the Sample, Los Angeles, August, 1951*

Prenatal Monthly Income	Percentage
$0-$150	67.6%
$151-$250	21.2%
Over $250	11.2%
Total	100.0%

Table 3 shows total charges for maternity care. Included are charges for all care received by the woman. Charges for pediatric care do not appear here. Almost one-quarter, or 24.0%, were charged more than $250 for maternity care. Over one-half, or 59.2%, were charged more than $150.

The women used several alternatives to reconcile the discrepancy between income and costs. One major group sought subsidized maternity care. Table 1 shows that 43.7% received some subsidized prenatal care and 36.6% subsidized hospital care. Another large group sought private care but paid for it on an installment basis. Half the women paid for private prenatal care in installments; however, payment for private hospitalization in installments was less frequent.

Somewhat less important was the use of supplemental funds such as savings or other income, insurance, or income from employment. Only 5.6% had even partial insurance coverage. Income from employment was used to pay part of prenatal costs in 9.9% of the cases and hospital costs in 8.5%. Subsidies were received by 47.9% of the women for their living expenses as well as/or for medical care. These women shared households and contributed less than their full share of expenses or lived in independent households and received regular contributions from parents.

2. THE PROBLEM OF DISTANCE TO MEDICAL FACILITIES

The second problem, distance, occurred often when a woman sought military care as an alternative to private care. The closest military hospital was approximately 50 miles to the north. The best known military hospital, approximately 100 miles south of the Los Angeles area, was at Camp Pendleton.

TABLE 3.—*Total Charges for Maternity Care to Seventy-One Women, Los Angeles, August, 1951*

Total Charges	Percentage
$0-$50 *	29.6%
$51-$100	1.4%
$101-$150	7.0%
$151-$200	16.9%
$201-$250	18.3%
$251-$300	8.5%
Over $300	15.5%
No information	2.8%
Total	100.0%

* Includes those women who received free prenatal care at military or public health department clinics and made token payment for care in military hospitals ($1.75 per day for rations) or were not billed for care at the Los Angeles County Hospitals.

The attitude of the women toward military hospitalization as distinct from county hospitalization was important in relation to this problem. They tended to accept military care as a real alternative available to them, but to define county hospital care as "for charity cases" and therefore not usually acceptable or available to them. Table 4 shows the percentage of women using the various types of care who indicated that distance to the military facilities was a deterring factor in their use.

Distance was undoubtedly made even more important because of the general inexperience of these women; 76.1% were primiparas, and 32.4% were 19 years of age or younger. They were not wives of professional soldiers; 42.3% of their husbands had been in the armed forces one year or less at the time of hospitalization. In 45% of the cases the husbands were in the three lowest pay grades.[3] Had military hospitalization been available within the county, it might have been used by a greater percentage of the women.

3. THE PROBLEM OF LACK OF KNOWLEDGE OF FACILITIES

There were four possible alternatives for prenatal care: (1) private physicians, (2) private hospital clinics, (3) city or county public health department clinics, and (4) military clinics. There were three possible alternatives for hospital care: (1) private hospitals, (2) military facilities, and (3) county hospitals. In some cases one or more of these was not a real alternative, since the women were unaware of its existence or learned of its existence relatively late in the prenatal period. Table 5 shows the distribution of lack of knowledge of military and/or city and county resources for maternity care.

TABLE 4.—*Percentage of Women Who Indicated Distance to Military Facility Was a Deterring Factor in Its Use*

Facility Actually Used	Percentage Deterred by Distance: For Prenatal Care	Percentage Deterred by Distance: For Hospitalization
Private	45.2%	51.5%
Public Health Departments	88.9%	68.8%
Military	70.0%	70.0%

TABLE 5.—*Distribution of Women Who Lacked Knowledge of Military and/or Public Health Department Resources*

Facility Not Known of	Percentage Lacking Knowledge: Prenatal Care	Percentage Lacking Knowledge: Hospital Care
Military facilities	16.9%	16.9%
Public health department facilities	25.4%	14.1%

About one-fourth, or 25.4%, of the women could not have chosen public health department facilities and 16.9% could not have chosen military facilities for prenatal care, since they were unaware of their existence or availability. Likewise, 16.9% could not have chosen military hospitals and 14.1% could not have chosen county hospitals. The only possible solution to this problem was to choose from the facilities that were known.

OTHER ITEMS OF INTEREST

In addition to the analysis of data in terms of the three general problems, the full report [4] discusses certain specific aspects of the maternity situation. It presents data concerning (1) postpartum care, (2) pediatric care of the infant, (3) pediatric care of older children, (4) medical complications, and (5) changes in the social situation subsequent to hospitalization.

REPORT OF CASES

The following cases were selected to illustrate the kinds of problems encountered by servicemen's dependents in seeking and receiving maternity and infant care. As previously discussed, the definition of financial hardship used in this study did not rest primarily on the type of medical care received, the particular facility used, nor the objective characteristics of the patient's particular situation. Rather, it rested primarily on the woman's feelings and attitudes regarding the kind of care that she received and the problems that she encountered. This means that one woman using county hospital facilities may have been particularly disturbed about this, because she normally,

2. Monthly income includes allotment, money earned from employment, and husband's pay if he was living in the household or any additional allowances if he was away from home.

3. The data showed that women with husbands in the higher pay grades tended to choose military care as the alternative to private care; women in the lower pay grades tended to choose nonmilitary public care as the alternative to private care.

4. Footnote 1, pp. 43-63.

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given the financial resources, would have used a private physician and a private hospital. Another woman using the same facilities may have been completely undisturbed because these were the resources that she would have used in any case. The second woman's "normal" circumstances are such that they were not drastically altered by her husband's induction into the armed services. The same is true for women using private hospitals. One woman used such facilities at the cost of great self-deprivation. Her opposite, however, using the same resources, may have done so without feeling any undue financial hardship. The other two problems encountered by servicemen's dependents when seeking and securing maternity and infant care, i.e., distance from medical facilities and lack of knowledge of community resources, may also have been in evidence in some cases and not in others, although the patients used the same facilities and appeared to be in identical circumstances.

The six case reports are grouped by type of hospital used. The women in the first two cases delivered in private hospitals; those in the second two cases delivered in military hospitals; and those in the third two cases delivered at county hospitals.

DELIVERY IN PRIVATE HOSPITALS

Case 1.—Background: Mrs. A. was 19 years old. Her husband, aged 22, was a private in the Army and was stationed in Germany at the time of the birth of this, her first child. He had been in the service approximately 10 months. Mrs. A.'s allotment was $85. She was not employed during her pregnancy. She lived with her sister and brother-in-law and their family during and after her pregnancy. She made no financial contribution to the household, but did all the housekeeping while her sister worked. Her allotment at time of interview was $107.50. For three weeks after her delivery, she lived in her mother's home while convalescing. At the end of that period, she moved back into her sister's household.

Medical Care: Mrs. A. had the services of a private obstetrician for her prenatal care, delivery, and postpartum care. Her first prenatal care was during the third month. She saw her doctor eight or nine times during pregnancy. Hospitalization was at a private hospital, about 35 miles from her home. Mrs. A. stayed in the hospital four days, in a ward bed. She has been seen by the obstetrician five times since delivery because of complications. The child is seen by a private pediatrician once a month.

Finances: Total cost for prenatal care, delivery, hospitalization, and postpartum care was $318. Of this, $175 was the physician's fee and $143 was hospitalization charges. The physician was paid in installments before delivery. The hospital was paid in full at the time of discharge. The charge for pediatric care amounts to $85 a year, paid in installments over a six month period.

Reasons for Choice and Attitude: Mrs. A. chose her physician because "my sister had that doctor." She "had not thought of using a public health department clinic." She definitely "would have chosen an Army facility, but Birmingham was closed and there was nothing reasonably near, Long Beach and Oceanside were much too far." She said, "If I didn't have my sister, we wouldn't have got by." She refused a blood transfusion that was recommended by her physician when she heard what the blood would cost, because "I didn't have the money." She "talked the doctor out of it." She said, "I paid the bills, but had nothing left. I had barely enough money for all the other things." All bills were paid from her allotment check. She said, "I had to take everything I had, my whole allotment—and had just nothing left, but I had to pay it and I got it all paid up."

Case 2.—Background: Mrs. B., aged 19, has lived in the Los Angeles area most of her life. Her husband, aged 22, was a sergeant in the Marine Corps, stationed about 80 miles east of Los Angeles. He had been in the service four years at the time of the birth of their first child. During the pregnancy, Mrs. B. lived with her husband in a trailer. She came into Los Angeles for her medical care and for the delivery of the child. Since the birth of the child, Mr. B. has been discharged from the Marine Corps. They are now living in the Los Angeles area in an independent household. Mrs. B. worked during the first two months of her pregnancy but has not been employed since. During the pregnancy she received an allotment of $127.50 per month.

Medical Care: Mrs. B. had the services of a private obstetrician for her maternity care. She was seen by the physician twice a month during her pregnancy. She came to Los Angeles for these visits—a distance of approximately 80 miles. Hospitalization was five days in a semiprivate room at a small hospital. Since the birth of the child there has been one postpartum examination. The child was first under the care of a private pediatrician and is now receiving care from a private general practitioner.

Finances: The total cost for prenatal, delivery, hospitalization, and postpartum care was $220. Of this, the physician's fees were $120. The hospital care cost $100. The physician was paid $50 through Blue Cross insurance. The remaining $70 was borrowed from Mrs. B.'s mother, and was paid to the physician in a lump sum after delivery. The hospital was paid in a lump sum at time of discharge. The $100 for this bill also was borrowed from Mrs. B.'s mother. The pediatric care has been paid for at each visit from Mr. B.'s salary. Mrs. B. did not know what the total cost had been to date.

Attitude and Reasons for Choice: Mrs. B. used the services of a private obstetrician because "my sister-in-law had her two babies with him." She said she didn't use the facilities at the Marine base because "I didn't want to, because you see one doctor in X, then they rush you to Y for your delivery and a different doctor takes care of you then." She didn't know about the county or city public health department clinics. She said "I might have used them; my husband may not have felt good about it, but it certainly would be a big help to some of the girls. Probably the care is just as good, too." She felt that the prenatal care she had received was excellent. She chose a private hospital for delivery rather than a military facility, because she thought "military care is not too good. You don't get any individual attention. They aren't careful." Though apparently she would have considered using a public health department clinic, the notion of a county hospital was something very different. She said, "Oh, my mother wouldn't want me to go there." In terms of the total financial situation, Mrs. B. said, "We were all right, we were very lucky compared to the other girls. We paid off my mother when my husband got his money from the State" (his veteran's bonus).

DELIVERY IN MILITARY HOSPITALS

Case 3.—Background: Mrs. C. was a 23-year-old woman who had lived in the Los Angeles area for two years at the time of the birth of her first child. Her husband, 27, a seaman first class in the Navy, was stationed in Virginia. During her pregnancy, she received an allotment of $85 a month. She worked until three weeks before the birth of the baby, earning approximately $45 a week. She shares a household with a roommate, paying half the rent and buying her own food. She has moved once since the birth of her child. Her husband is still in the service. She now receives an allotment of $147 and has not worked since the birth of the child.

Medical Care: Mrs. C. used the services of a private obstetrician and a Navy infirmary. She began her prenatal care with the obstetrician in her second month and continued with this physician through her eighth month. She then made one visit to a Navy infirmary for her final check-up. Delivery and hospitalization for four days were at a Navy hospital. She was examined at six weeks postpartum by a private gynecologist, and her baby is under the care of a private pediatrician.

Finances: Cost for prenatal care was $55 for the private physician. There was no charge for delivery, and only token payment ($1.75 per day) for hospitalization. Postpartum care cost approximately $10 plus $4 for each injection treatment.

Attitudes and Reasons for Care: Mrs. C. indicated she chose a private obstetrician for care because "I was sick at the beginning of my pregnancy and couldn't wait for a clinic appointment at the Navy infirmary." She didn't know of the existence of private hospital clinics, nor did she know of the existence of city or county public health department clinics.

She said she would have gone to the Navy infirmary, if she "hadn't had to wait half a day." She indicated she had first made an appointment at the Navy infirmary, waited three hours to see a physician, and then cancelled the appointment. She was "too sick to wait." As to her choice of the Navy hospital for hospital care, she said, "It was a matter of finances. I didn't have the money to go any place else." She would have gone to a private hospital if she had had the money. She said, "My father died just before the baby came and I used what I saved from my salary as well as my allotment to pay for his funeral." She did not know of the existence of county hospital facilities. She thought her care with her private doctor was good. She also said, "The only thing I didn't like about the Navy infirmary was the waiting." She was pleased with her hospital care: "It was awfully nice. The food was good and the treatment was very nice." As to the financial situation, she "didn't feel her doctor had charged her too much," but she did feel financial hardship "because of the extra expenses of (her) father's funeral."

Case 4.—Background: Mrs. D., aged 20, has lived in the Los Angeles area for approximately one year. At the time of the delivery of her first child her husband was a petty officer in the Navy, stationed in the Los Angeles area, and had been in the service for one and one-half years. Mrs. D. was living in an independent household with her husband, who was home most evenings. Her allotment was $127.50. This, plus her husband's income, made a total monthly income af approximately $220. Mrs. D. was not employed during her pregnancy. There has not been any change in the social situation since the birth of the child.

Medical Care: Mrs. D. used the services of a Navy infirmary for her prenatal and postpartum care and for her child's pediatric care. She delivered at a Navy hospital. Prenatal care began in the sixth month. She visited the infirmary once a month until the last two months, at which time she went every two weeks until the last month. During her last month, she visited the infirmary weekly. She was hospitalized for 10 days in a ward. Mrs. D. had a postpartum check-up at the Navy infirmary three months after her delivery. The child was seen for pediatric care at the Navy infirmary 15 days after his birth and then monthly.

Finances: There were no charges for maternity or pediatric care in this case, except a token payment ($1.75 per day) for hospitalization.

Attitude and Reasons for Choice: Mrs. D. said she chose the Navy infirmary for prenatal care because "I'm in the Navy and I'm entitled to that care." "Some of the guys are uppity and said they never would send their wives to the Navy infirmary but I don't believe in that." She had tried to get an appointment at the infirmary as soon as she arrived in Los Angeles when she was four months pregnant; however, she could not get an appointment until her sixth month. She did not know of the existence of public health department clinics in the Los Angeles area, but said "I would not have gone anywhere else, when I could get free care through the Navy." Regarding prenatal care, she "had no complaint about it except that you have to wait, and it's a long way to go." In regard to her hospital care, she chose a Navy hospital because "it was free." It never occurred to her to use a private hospital and she didn't know of the existence of county hospital facilities. She said, "It was far to go, but I had very good care. I had a lot of trouble, and they were very nice."

DELIVERY IN A COUNTY HOSPITAL

Case 5.—Background: Mrs. E. was a 20-year-old woman who had lived in the Los Angeles area five months at the time of the birth of her first child. Her husband was a corporal in the Army, stationed at a camp in northern California. He had been in the service nine months. Mrs. E. lived with her sister and her sister's family. She contributed about $40 a month to the household. Her allotment during her pregnancy was $85. She worked during the first three months of her pregnancy as a waitress, earning approximately $32 a week. Mrs. E. moved into her mother's household after the birth of the child and lived there about five months, then moved back into her sister's household. With the birth of her child, her allotment was increased to $127.50. Her husband is now stationed in Korea and "I think he is a sergeant." Mrs. E. worked for two months after the birth of the child, earning approximately $55 a week. The contribution to the sister's household has remained the same.

Medical Care: Mrs. E. used the services of an Army infirmary for prenatal, postpartum and pediatric care. She delivered at a county hospital. Prenatal care began in the fourth month. Mrs. E. went to the infirmary once a month, by public transportation. She said it took approximately one hour to get there. She was hospitalized for five days, in a ward bed. She was seen at the infirmary for a postpartum examination at six weeks. The child has been taken to the infirmary approximately once a month since its birth.

Finances: Medical care at the infirmary was free. Mrs. E. has not received a bill for hospitalization.[5]

Attitude and Reasons for Choice: Mrs. E. indicated that "I could not afford private care," and that was why she chose the military facility for her prenatal care. She said, "I liked my care and only wish there had been a (military) hospital closer that I could have gone to." In addition to her prenatal care at the Army infirmary, it was necessary for her to go to a Navy hospital twice during her pregnancy, for "extra care and blood transfusion." Regarding her choice of the hospital, she said, "It was the only place I could afford to go. Private hospitals are too expensive and the military hospital was much too far. I could have never made it there on time." Her general attitude about the total maternity situation was, "It was wonderful to get everything free."

Case 6.—Background: Mrs. F., aged 24, has lived in Los Angeles all her life. Her husband, aged 23, is a private in the Army. He had been in the service approximately three months at the time of delivery. Mrs. F. received an allotment of $85. She worked until her seventh month of pregnancy as a waitress and earned $35 per week. She lived in her own apartment in a low-cost hotel during her pregnancy; her mother lived in the same hotel but they did not share quarters. Mrs. F.'s allotment was cut off at the time of the birth of her child, because her husband was AWOL. He is now waiting court martial at an Army camp. She is living on general relief, receiving $75 a month from the county. She has not worked since the birth of the child.

Medical Care: Mrs. F. used the services of a city public health department prenatal clinic. Her first visit to the clinic was during the fifth month. She went approximately every two weeks. The clinic was close enough for her to walk. Hospitalization for six days at the time of delivery was at a county hospital, in a ward. There have been no postpartum examinations since discharge from the hospital. The child has had pediatric care at a public health department clinic once a month since its birth. It had bronchitis shortly after birth and was hospitalized three days at the same county hospital.

Finances: There were no charges for prenatal, delivery, postpartum, or pediatric care. Mrs. F. has not been billed for hospitalization.

Attitudes and Reasons for Choice: Mrs. F. indicated she "could not afford a private doctor and the military clinic was too far." She said, "I would have preferred to have had my own doctor if I could have afforded it." She selected the county hospital for delivery and hospitalization "for the same reason." She indicated she was satisfied with the care she received.

5. Patients in labor are eligible for admission to the county hospitals either as medically indigent residents of the county or because they are medical emergencies. Those who are dependent on a service allotment and who are or whose husbands are residents of Los Angeles County are not currently billed. They may at a later time, if an increase in their assets warrants, receive bills for the cost of care. The others are billed soon after discharge. Under state law and county ordinance, the cost of all medical care given is reimbursable and the county may attempt to recover the cost. Persons who appear to have no ability to pay are not pressed for payment.

THE LEISURE CORNER

THE FLOWERING HOBBY

A well-chosen hobby growing naturally out of innate desires, needs, and abilities makes a joyful contribution to the art of living when things go well in the practice of medicine and at the same time provides a sphere of activity to which it is possible to turn for solace when the problems of a busy medical life enlarge. High on the list of activities that can be pursued as a hobby is the ancient and enjoyable art of gardening. Raising flowers appeals to several senses and is full of rewards and surprises, for, besides the fact that it can be shared with others and thereby doubly enjoyed, its study and cultivation may also be carried as far and wide and made as specialized as the interested hobbyist wishes. Actually, horticulturists are ideal hobbyists for riding their hobby horses along garden paths and through the bypaths of suburban and metropolitan back yards, pausing to sniff graciously at the humble flower pot. To enter this kind of world, a love of flowers and plants and a bit of earth are the only equipment necessary to start the busy physician off on an interest that can lead to such highly specialized activities as the cultivation of prize-winning flowers.

Some years ago Charles Dudley Warner, the writer, expressed the belief that sooner or later an inborn love for the soil eventually makes itself known to every human being. "Mud pies," he asserted, "gratify one of our first and best instincts. Therefore, for those who ask, 'Who should attempt growing flowers?' the answer is 'Anyone who likes them well enough to take care of them.'" Since many flowers will thrive almost under any conditions if given reasonable attention, raising flowers is a pursuit suitable for physicians who reside in suburbs and rural communities and for city dwellers who are landless but not potless, or who, at best, are owners of a tiny back yard. Today more and more miniature gardens sprout in metropolitan environs; flowers need be neither confined to back yards and roofs nor limited to the restrictions imposed by indoor gardens or window boxes. Literally, a green fairyland can be the lot of the urban dweller who, by watching flowers and plants unfold their leaves and develop their blossoms, may indulge in flights of the imagination that will convey him above imaginary fields and mountainsides.

Flowers are mostly grown in gardens where, appropriately enough, they either mingle with other flowers or occupy an individual corner all by themselves. It is in home gardens that much experimental work on the propagation and growth of flowers has been carried on, and it is in precisely this milieu that the flowering hobbyist notices their virtues and their flaws. Here, the terminology of flower culture will carry the physician back to the day when he studied biology as a medical student—genes and chromosomes, pollen, fungi, viruses, and molds. There are vectors to be dealt with, and the process of hybridizing, and the breeding out of undesired traits in flowers while retaining more desirable characteristics.

Take the case of the African violet (Saintpaulia), a favorite American house plant, which grows well and blooms almost endlessly under conditions imposed by the average house dwelling, but which will not flourish so readily as to permit the disinterested person to neglect it or to lose interest in it. More than a half century ago the African violet was discovered in the hilly regions of eastern tropical Africa. From the day of its discovery, it took the horticultural world by storm, so that when in the autumn of 1946 the first African violet show was sponsored in Atlanta, Ga., the ensuing thousands of visiting violet fans required the attention of police to maintain traffic and order. Today, few persons dispute the possibilities of the African violet as a hobby plant for collectors, and at least 175 varieties appear by name in lists gathered throughout the United States.

While many plants are grown for their foliage, this is not the case of the African violet; since its native habitat is in shady nooks and in wooded places, it does not require a flood of sunshine. Indeed, too much sunshine affects foliage adversely, turning it yellow, burning the margin of leaves, or causing malformation of leaf and flower. In general, it flowers well in any light situation where brightness is somewhat diffused. The stronger the light the deeper the color tones and the greater the tendency to flower. The most satisfactory circumstance surrounding the African violet is its tolerance to the usual household heat and its ability to thrive in an atmosphere up to 75 F. A temperature less than 60 F impedes both growth and flowering. Many hobbyists have found that African violets bloom and thrive more freely if each plant is set on a pebble-filled saucer with some water in it as a ready means of humidifying the surrounding air.

African violets are easily propagated, and they multiply readily by means of division or through leaf propagation; moreover, they can be raised from seed, and from a single seed pod it is possible to obtain as many different varieties as there are seeds. Not so long ago there was but one type of Africa violet extant, a species known to the initiated as Saintpaulia ionanatha. Now there are scores. Definite strains and varieties are being grown, with purples, pinks, and whites abounding.

In the United States alone approximately 75 species of North American violets are found, several kinds having what botanists call cleistogamous flowers. These are flowers that follow the early, showy-colored blossoms of the plant and are produced on very short scapes hidden beneath the leaves and sometimes in the soil itself. Cleistogamous flowers have no petals, never open, and contain very little pollen; as they are confined wholly within the blossom, the seeds are invariably fertile. Among the commoner species of violets producing cleistogamous flowers are the round-leaf violet, butterfly violet, palm violet, and the blue marsh violet.

Numerous violets are propagated from seed, while many kinds are due to division and to spread by means of short runners. In favorable locations certain species, for example, the blue marsh violet in the garden and the sweet white violet in the woodland, tend to become obnoxious, since they seed so freely and grow so rapidly that more fragile flowers encountered by them become half smothered.

Violets are further classified into two groups: a stemless group, in which leaves and scapes rise directly from the root stock or from runners, including such specimens as birdsfoot violet, blue marsh violet, and palm violet, and a second group, having tall, leafy stems, and whose best known members are the downy yellow violet and the Canada violet. A two-colored birdsfoot violet has upper petals of rich, royal purple and lower ones of pale blue, making it probably the showiest of all violets. The birdsfoot violet belongs to the stemless species and is easily naturalized in almost any soil that is not too wet. The two-colored violet nearly always blossoms in autumn and in spring.

The butterfly violet is one of the strongest growing, most persistent members of the violet species, seeding itself so as to form a veritable ground cover. It grows from 6 to 10 inches in height; its flowers are quite large; and it varies in color from deep blue to white. The Confederate violet, consisting of blue and gray colors, is apparently a variety of this species. The palm violet derives its name from the shape of its leaves, which are large, substantial clumps a foot in height that completely cover the ground in moist or fairly dry shade. The roundleaf violet is one of the earliest wildflowers to bloom, while the downy yellow violet is a foot tall.

The sweet white violet blossoms in the spring, and the tiny white flowers on its stems are only two to three inches tall and are very fragrant. Like most violets, the leaves increase rapidly in size after blooming. The Canada violet, whose fragrant flowers are white with a purplish tinge and blossom more or less throughout the summer, grow a foot or more tall. Finally, the primrose-leaved violet derives its name from the shape of its leaves. This species thrives most satisfactorily in moist soil that contains a considerable amount of sand.

What has been said about violets applies equally well to a vast number of other flowers and plants, be they roses, orchids, irises, lilies, or camellias. All in all, an interest in flowers can easily become a hobby that consists of doing what one wants to do, rather than a fad that is pursued because other persons do it.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Ophthalmology, Chicago

49:481-590 (May) 1953

Preanesthetic Sedation and Analgesia for Intraocular Operations Done with Local Anesthesia. W. S. Atkinson.—p. 481.
*Effects of Experimentally Decreased or Increased Oxygen Supply in Some Ophthalmic Diseases: Practical Value for Diagnosis, Prognosis, and Treatment. G. Bietti.—p. 491.
Vascular Loops in Vitreous. T. Bisland.—p. 514.
Evaluation of Plastic Spectacle Lenses. A. H. Keeney and H. L. Duerson Jr.—p. 530.
Nutritional Dystrophy of Corneal Epithelium: Preliminary Report of Patients Reacting Favorably to Vitamin Therapy. P. J. Nañagas.—p. 536.
Diseases of the Retina. A. E. Maumenee.—p. 553.

Oxygen Supply in Ophthalmic Diseases.—The author studied the behavior of visual functions under modified oxygen supply in several ophthalmic diseases. A reduced oxygen supply to the visual apparatus was obtained by producing a general, more or less severe, anoxia by having the patient breathe an oxygen-poor mixture or by placing him in a depression chamber reproducing the conditions met in the normal atmosphere at between 13,000 and 26,000 ft. (3,900 and 7,800 m.). A reduction of the oxygen supply to only the retina and the optic nerve was obtained by exerting on the eyeball a graded amount of compression with a dynamometer, proportional to the arterial pressure of the retina. With such a technique, which produces only moderate changes of the visual functions in normal subjects, some visual deficiencies may be discovered, as follows: enlargement of the blind spot in early glaucoma; appearance of a central scotoma and pronounced decrease of visual acuity; reduction in the limits of the visual fields in certain neuroretinal diseases; occurrence of ignored hemianopsia in disorders of the intracranial optic pathways; severe impairment of seemingly normal muscle balance; impairment of the audiometric response, which appears to be typical for certain ocular diseases such as glaucoma; and an abnormal decrease of the flicker fusion frequency. Since the compression of the eyeball reduces the oxygen supply locally, while general anoxia involves the function of whole visual pathways, a difference in results of the two procedures sometimes permits localization of the lesion. The anoxia test is an additional diagnostic and prognostic procedure in the field of ocular diseases. Results of the author's study proved that the action of anoxia on the visual function is both peripheral and central. Additional studies were made by increasing the oxygen supply to the eye, chiefly through inhalation of pure oxygen at atmospheric pressure. This produced a reduction, or even disappearance, of scotomatous areas of the visual field, as well as improvement in the impaired visual functions in many ocular disorders. Areas that had not completely lost their function were revealed. The behavior of some visual functions under modified oxygen supply in several ophthalmic diseases represents a new procedure that may be of value in ophthalmology.

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Titles marked with an asterisk (*) are abstracted.

A.M.A. Arch. Pathology, Chicago

55:357-442 (May) 1953

Pathogenesis of Coronary Sclerosis. P. H. Lober.—p. 357.
Dynamics of Inflammation and of Repair: III. Effects of Tissue Extracts and of Protein Split Products upon Capillary Permeability and upon Leucocytes. V. H. Moon and G. A. Tershakovec.—p. 384.
Comparison of Pathologic Effects of Radiation in Weanling and Adult Rats. G. W. Casarett.—p. 393.
Spontaneous Cryptococcosis of Marmoset Monkeys in Panama. M. J. Takos and N. W. Elton.—p. 403.
*Myocarditis in Poliomyelitis. H. A. Teloh.—p. 408.
Experimental Aberrant Mediastinal Goiters (Thymic) in Rat. J. H. Van Dyke.—p. 412.
Development of Pigmentary Cirrhosis in Cooley's Anemia. J. Howell and J. P. Wyatt.—p. 423.

Myocarditis in Poliomyelitis.—The presence of acute myocarditis in patients dying of poliomyelitis has suggested that cardiac failure may be a principal or a contributing cause of death. The report is based on 47 fatal cases in which autopsies were done from 1942 to 1951, inclusive. Typical spinal and bulbar lesions of acute anterior poliomyelitis were present in all. Myocardial sections were fixed in Zenker's or alcohol-formaldehyde solutions, embedded in paraffin, and stained with hematoxylin and eosin. Acute myocarditis was found in 26 of the patients. During the epidemic of 1949, the incidence of myocarditis was much greater than in any other year (100%), and it was also severer. This corroborates evidence collected by other authors that during certain epidemics there are viscerotropic strains of the virus which may injure the myocardium. The occurrence of acute myocarditis could not be correlated with sex or age of the patient or with the occurrence of cardiac dilatation or hypertrophy. The significance of myocarditis in poliomyelitis is not fully understood. In many of the sections examined in this study, as well as in those reported in the literature, the inflammation is minimal and focal in distribution, and this fact raises a question of its functional significance. The myocarditis may be of only incidental importance, and the mechanism of its development remains unknown.

A.M.A. Arch. Surgery, Chicago

66:579-700 (May) 1953

Fibroblastic Stimulation of Rabbit Artery Adventitia by Marine Varnish, "Krylon," and Latex: Laboratory Study Related to Surgery of Congenital Cerebral Aneurysm. B. Woodhall and J. Golden.—p. 587.
Prevention of Experimental Esophageal Stricture by Cortisone: II. Control of Suppurative Complications by Penicillin. N. Rosenberg, P. J. Kunderman, L. Vroman and S. E. Moolten.—p. 593.
Anatomy of Biliary Ducts Within Human Liver: Analysis of Prevailing Pattern of Branchings and Major Variations of Biliary Ducts. J. E. Healey Jr. and P. C. Schroy.—p. 599.
Use of Crystalline Soybean Trypsin Inhibitor in Acute Hemorrhagic Pancreatitis in Dogs. H. L. Hoffman, J. Jacobs and S. O. Freedlander.—p. 617.
Homotransplantation of Dog Heart. H. G. Downie.—p. 624.
Abdominoperineal Operation for High Imperforate Anus in the Newborn. H. R. Butcher.—p. 637.
Postmastectomy Edema of Arm. W. R. Deaton Jr. and H. H. Bradshaw.—p. 641.
Primary Repair of Major Arterial Injuries: Report of 58 Battle Casualties. E. J. Jahnke Jr. and J. M. Howard.—p. 646.
Tryptic Débridement of Clotted Hemothorax: Experimental and Clinical Study. C. E. McCroskey and C. A. Hardin.—p. 650.
Roentgenologic Diagnosis of Traumatic Rupture of Thoracic Aorta. A. C. Wyman.—p. 656.
*Survey of Current Opinions Concerning Carcinoma of Breast Occurring During Pregnancy. J. H. Cheek.—p. 664.
Use of Polyethylene Tubing in Intravenous Therapy for Surgical Patients. P. Erwin, J. H. Strickler and C. O. Rice.—p. 673.

Carcinoma of Breast During Pregnancy.—A questionnaire concerning carcinoma of the breast during pregnancy was submitted to 55 physicians who had either published papers on the subject or who were considered to be especially interested in it. The questionnaire covered the following points: the number of cases of carcinoma of the breast developing during pregnancy, number of five year cures obtained, operability

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rate, whether pregnancy following a previous radical mastectomy increases the chances of development of carcinoma in the remaining breast, advisability of interruption of pregnancy in a patient in whom carcinoma of the breast develops in the first, second, or third trimester of pregnancy, and advisability of tubal sterilization or ligation following radical mastectomy in the premenopausal woman to prevent further pregnancies. Replies to the questionnaire were received from 47 physicians, but not all of them commented on all five questions. The survey indicates that, although results of treatment of carcinoma of the breast in pregnancy are disappointing and the prognosis is poor, the prognosis need not be invariably hopeless. Occasional five year cures have been reported. None of the respondents considered pregnancy itself an absolute contraindication to surgery. Termination of pregnancy seems to be indicated, particularly if the cancer is discovered during the first half of gestation. There is general agreement that subsequent pregnancies should be avoided by women who have had mammary carcinoma, but most physicians thought that conventional contraceptive measures would be adequate. A few considered surgical castration advisable. Whether pregnancy may increase the chances of carcinoma developing in the remaining breast remains an unsettled point. Most of those who replied thought that it would not. Any hope for improvement of the prognosis lies in recognition of the growth at a stage when it is still operable. Obstetricians should examine the breasts of their patients at frequent intervals. Instruction of patients concerning technique of examination of their own breasts may be of considerable value.

American Journal of Hygiene, Baltimore

57:253-412 (May) 1953. **Partial Index**

Studies on Destruction of Bacterial Virus: III. Dynamics of Removal of Bacterial Virus (Bacteriophage Against Micrococcus Pyogenes Var. Albus) in Water by Flocculation with Aluminum Sulfate. S. L. Chang, P. C. G. Isaac and N. Baine.—p. 253.

Studies on Blood-Plasma Therapy in Experimental Poliomyelitis in Rhesus Monkeys. S. G. Lensen, O. E. Olson and L. P. Hedeman. —p. 267.

Studies on Nature of Immunity to Trichinella Spiralis in Parabiotic Rats. H. Zaiman.—p. 297.

Capillary-Tube Test for Leptospirosis. H. G. Stoenner.—p. 316.

Histoplasmin and Tuberculin Sensitivity Among Illinois Residents. W. G. Beadenkopf, J. T. Grayston, L. J. Savage and others.—p. 328.

*Cancer Detection: Analysis and Evaluation of 2,111 Examinations. E. Day, T. G. Rigney and L. F. Beck.—p. 344.

Propagation of Endamoeba Histolytica in Tissue-Bearing Culture Without Accompanying Bacteria or Other Microorganisms. J. G. Shaffer, H. S. Sienkiewicz and J. E. Washington.—p. 366.

Studies on Multiple Sclerosis in Winnipeg, Manitoba, and New Orleans, Louisiana. I. Prevalence: Comparison Between Patient Groups in Winnipeg and New Oreans. K. B. Westlund and L. T. Kurland.—p. 380.

Cancer Detection.—This paper reports the results of 2,111 initial examinations of adults at the Kips Bay-Yorkville Cancer Detection Center, a pilot project of the department of public health and preventive medicine of Cornell Medical College and the New York City Department of Health. The study was undertaken to evaluate cancer detection in adult health services. Twenty-seven (1.3%) of the examinees were found to have cancer, even though the group had been prescreened to exclude persons with symptoms suggesting malignancy. More than half of the patients found to have cancer had no symptoms. These instances of asymptomatic cancer (the true cancer detections) constituted 0.8% of all persons examined. Precancerous neoplasms and other lesions requiring care as a precaution against cancer contributed 14.3 diagnoses on the average for each 100 persons examined. Polyps of the colon and rectum constituted the largest component of the precancerous group. Routine proctosigmoidoscopy revealed neoplastic lesions (mostly polyps) in 5.0% of males and 3.7% of females on first examination. An additional 2.7% showed such lesions on reexamination after approximately one year. Pathological conditions not related to cancer were almost nine times as numerous as cancer and precancerous lesions. Such diagnoses averaged 131 per 100 examinees, or more than one for each person examined. The authors feel that the following are among the most significant contributions of the cancer detection service: 1. The diagnosis of a small number of cases of asymptomatic cancer. 2. The impetus given to the study and the treatment of conditions assumed to be precancerous. 3. The detection in presumably healthy adults of a large number of pathological conditions unrelated to cancer. 4. The initiation of corrective measures and early treatment by referral.

American Journal of Medical Sciences, Philadelphia

225:469-588 (May) 1953

*Clinical Significance of Apical and Aortic Systolic Heart Murmurs (Without Diastolic Murmurs) as Heard with Stethoscope. P. D. White, R. S. Schaaf, T. B. Counihan and B. Hall.—p. 469.

Nature of Circulatory Failure in Accidental Death. H. G. Swann, R. Anigstein and C. C. Clark.—p. 475.

Sodium Salicylate in Rheumatic Fever: Effect of Adjuvant Medication. L. L. Henderson.—p. 480.

*Association of Polycystic Kidneys with Intracranial Aneurysms and Other Related Disorders. N. H. Bigelow.—p. 485.

Anticoagulant Effect of Phenylindanedione in Thromboembolic Disorders. K. W. G. Brown and R. L. MacMillan.—p. 495.

Chronic Atrophic Gastritis: Symptomatic Proclivities. E. D. Palmer. —p. 501.

Arterial Hypertension Among Indians of Southwestern United States. B. M. Cohen.—p. 505.

Variants of "March Hemoglobinuria." B. H. Chaiken, E. J. Whalen, N. Learner and others.—p. 514.

Bedside Method for Determining Serum Chlorides as an Aid in Detecting Chloride Depletion Syndrome in Patients Receiving Mercurial Diuretics. L. T. Gziou and J. J. Silverman.—p. 521.

Antagonism and Addition from Combinations of Aureomycin and Penicillin in Treatment of Pneumococcic Infections in Mice. G. G. Jackson, M. H. Lepper, J. Seto and H. F. Dowling.—p. 525.

Value of Dihydrostreptomycin in Pre-Operative Preparation of Gut. M. I. Riddell, H. S. Morton and E. G. D. Murray.—p. 535.

Use of Chloromycetin in Treatment of Salmonella Carriers in State Institution. I. A. LaCore and J. H. Conlin.—p. 547.

Metabolic Effects, Toxicity and Excretion of Calcium N-Cyclohexylsulfamate (Sucaryl) in Man. J. A. Schoenberger, D. M. Rix, A. Sakamoto and others.—p. 551.

Intravenous Use of Combination of Sodium Para-Aminosalicylate and Polyvinyl Pyrrolidone in Chemotherapy of Tuberculosis. W. Weiss, M. Seven and G. M. Eisenberg.—p. 560.

Surgery of Acquired Valvular Heart Disease. M. L. Kramer.—p. 565.

Apical and Aortic Systolic Heart Murmurs.—Results of a follow-up study of 1,212 patients with cardiovascular disease with slight or moderate systolic murmurs were compared with those of 187 patients with loud or very loud systolic murmurs and with those of 200 patients who had no murmurs. None of the patients had diastolic murmurs, and the systolic murmurs were loudest at the cardiac apex or aortic valve. There were slightly more patients with slight or moderate murmurs than patients without murmurs; the ratio of persons with slight or moderate murmurs to patients with loud and very loud murmurs was 6½:1. The ratio of men to women (3:2) and the age incidence (most of the patients were over 50) were the same for all three groups. Patients with coronary or hypertensive heart disease, or both, outnumbered those with other types of heart disease in all three groups. There seemed to be a great difference in the prevalence of rheumatic heart disease, however, which was observed in 27% of the patients with loud murmurs, in only 3% of those with lesser murmurs, and in none of those without murmurs. There were patients with other or unidentified types of heart disease. The systolic murmur was maximal over the aortic valve rather than the apex in about one-fifth of the patients with murmurs, but in 26% of those with lesser murmurs there seemed to be little difference between the aortic and apical intensities. Those with the loudest murmurs had shorter lives than those with lesser or no murmurs, but occasionally patients (8%) with loud and very loud murmurs were still alive more than 15 years after the murmurs were discovered. The relation of the intensity of the murmurs to mortality was qualified by three other important findings: The mortality among men was greater than that among women in all the groups. Pre-existing coronary or hypertensive heart disease was much more serious than rheumatic heart disease. Younger age was probably a factor in some of the rheumatic cases. No evidence was revealed that aortic systolic murmurs without diastolic murmurs have any more unfavorable prognosis per se than apical systolic murmurs. One of the most impressive findings was

that moderate to great heart enlargement predisposed to early death in all of the patients. This was a more important factor in all the three groups of patients than any other, including loudness of the murmur itself. Many murmurs reveal the presence of strain-producing valvular defects, but such defects vary greatly in importance, as do patients in their ability to resist such strain.

Association of Polycystic Kidneys with Intracranial Aneurysms.—Congenital intracranial aneurysm and polycystic renal disease were associated in 32 cases collected from the literature. This incidence suggests that more than coincidence is involved in this relationship. The presence of these two lesions in three additional patients is reported. In the first patient, aged 33, death was due primarily to slow bleeding from an intracranial aneurysm; the presence of polycystic kidneys was revealed by necropsy. In the second patient, aged 62, death was due to uremia from failure of the polycystic kidneys, and the presence of a symptomless intracranial aneurysm was disclosed by careful examination of the cerebral arteries. In the third patient, aged 52, illness and death were caused by a widespread bronchogenic carcinoma. Two minute unruptured intracranial aneurysms and polycystic kidneys were accidental postmortem discoveries. Other anomalies such as coarctation of the aorta, biliary cysts, and cysts of the pancreas that have been observed in association with either intracranial aneurysms or congenital polycystic kidneys are discussed. Polycystic disease of the kidneys may represent one phase of a disseminated congenital disorder somewhat analogous to tuberous sclerosis, neurofibromatosis of Von Recklinghausen, or Lindau-Von Hippel disease.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

37:201-300 (May) 1953

*Study of Pinta in Tepalcatepec Basin, Michoacan, Mexico: I. Field Identification of Disease. W. F. Edmundson, A. L. Rico and S. Olansky.—p. 201.

*Id.: II. Mass Survey Considerations. W. F. Edmundson, A. L. Rico and S. Olansky.—p. 207.

Id.: III. Survey Results and Interpretation. W. F. Edmundson, A. L. Rico and S. Olansky.—p. 213.

Id.: IV. Serologic Findings in Survey. W. F. Edmundson, A. L. Rico and S. Olansky.—p. 221.

Effect of Adrenocortical Hormones on Lightning Pains and Visceral Crises of Tabes Dorsalis, with Some Remarks on Pathogenesis of Tabes Dorsalis. J. E. Moore.—p. 226.

Important Details Concerning Argyll Robertson Pupil. C. D. Benton Jr.—p. 232.

Ambulatory Treatment of Cardiovascular Syphilis with Penicillin. J. Edeiken, H. Beerman, J. H. Stokes and E. Stannard.—p. 237.

Broad-Spectrum Antibiotic Therapy of Early Syphilis: Posttreatment Survey. H. M. Robinson and H. M. Robinson Jr.—p. 243.

Treatment of Early Syphilis with Terramycin: Report Based on Study of 10 Cases. S. Irgang and E. R. Alexander.—p. 247.

Intramuscular Chloromycetin (Chloramphenicol) in Treatment of Venereal Disease. S. Olansky, F. W. Harb, C. E. Wood and D. S. Rambo.—p. 253.

Treatment of Acute Gonorrhea in Male Patients with Aureomycin-Triple Sulfonamide Combination. L. T. Wright and W. I. Metzger.—p. 259.

Study of Neurath Inhibition Phenomenon in Serodiagnosis of Syphilis. V. H. Falcone, A. Harris, S. Olansky and others.—p. 264.

Serology, Frei Reaction, and Epidemiology of Lymphogranuloma Venereum. A. B. Greaves and S. R. Taggart.—p. 273.

Identification of Pinta in Mexico.—Most of the estimated 250,000 victims of pinta in Mexico live in the valley of the Balsas River; the Tepalcatepec River is its most important tributary. The Center of Epidemiological Studies is making a study of pinta in the Tepalcatepec Basin, taking into account family relationships, domiciliary conditions, nutritional status, employment, exposure to and acquisition of other endemic diseases, and other factors with the hope of learning more of the nature of the disease, its transmission, and epidemiological control. Pinta is principally a disease of the skin that generally causes no disability or serious physical handicap. The victims of the disease move freely only in the geographic regions where the disease is endemic, because they are considered socially undesirable in pinta-free communities owing to the belief that the disease is contagious. Pinta, therefore, takes on socioeconomic importance. The main effects of the disease are disturbances in the normal pigmentation of the skin, often of unsightly character. In this first of the four reports a study is reported on 121 of 256 inhabitants of Capirio, a village on the Tepalcatepec River. The study consisted of examination of the exposed surfaces of the body (head and neck, chest in whole or parts, arms, thighs, and legs), serologic tests for syphilis, and in some cases the Treponema pallidum immobilization test and dark-field examinations. In all patients with pinta the Treponema pallidum immobilization tests were positive. In two patients the standard serologic tests and the Treponema pallidum immobilization differed; no pinta was observed in either patient. To check the accuracy of self-diagnosis of pinta or of that made by an older member of the family, a comparison was made between the self-diagnosis and the diagnosis arrived at by the examining dermatologist. Four errors in self-diagnosis were found in 64 patients. With this degree of accuracy, the following incidence of pinta was found in the families of the Capirio community. Of the 54 families with 256 persons, there were 39 families in which living members had a history of pinta. In 12 families one-half or less of the members had the disease, and in 27 families more than one-half of the family were affected, all members being affected in 11 of these 27 families.

Pinta in Mexico: Mass Survey Considerations.—In this second of the four reports results of a clinical and serologic study of pinta are presented. Exposed surfaces of the skin were examined and serologic tests done for syphilis in 238 persons, of whom 52 were found to have pinta. Examination of the exposed surfaces of the body proved efficient for field identification of the disease. Clinical diagnoses made by this method were confirmed by serologic studies with very few exceptions. Serologic examinations are considered not necessary or practical as a case-finding device in mass surveys for pinta. There is no way of making the differential diagnosis serologically between syphilis and pinta. Since it is extremely unlikely that syphilis is not extant to some degree in these populations, the reactions found in the untreated group are probably syphilitic, biologic false-positive reactions, or results of treatment in persons who denied it but nevertheless had been adequately treated for pinta. In the towns studied, medical care was given by practical nurses, who treated pinta patients with penicillin and/or arsenicals under medical supervision. In the two communities in which many of the patients had been treated previously, pinta was found to be disappearing, as evidenced by the relatively few cases of the disease found among children. The control of pinta is believed possible by adequate treatment of clinical cases, vigilance for, and prompt treatment of newly infected patients appearing or arriving in the treated areas, and proper re-treatment of recurrent disease.

Am. J. Tropical Medicine & Hygiene, Baltimore

2:347-556 (May) 1953

SYMPOSIUM ON TOXOPLASMOSIS

Toxoplasmosis: Current Status and Unsolved Problems: Introductory Remarks. A. B. Sabin.—p. 360.

Biology of Toxoplasma. L. Jacobs.— 365.

Host, Strain and Treatment Variation as Factors in Pathogenesis of Toxoplasmosis. J. K. Frenkel.—p. 390.

Toxoplasma-Like Protozoa in Chorioretinitis in Adults. H. C. Wilder.—p. 417.

Clinical Manifestations and Laboratory Diagnosis of Toxoplasmosis. H. A. Feldman.—p. 420.

Present Status of Chemotherapy of Toxoplasmosis. D. E. Eyles.—p. 429.

Imported and Indigenous Malaria in the United States, 1952. R. F. Fritz and J. M. Andrews.—p. 445.

Duration of Activity of Western Equine Encephalitis Neutralizing Antibodies in Aedes Nigromaculis and Culex Tarsalis. R. P. Scrivani, W. C. Reeves and B. Brookman.—p. 457.

Yellow Fever in Bolivia, Its History and Epidemiology. G. Bevier, N. Torres-Muñoz and J. Doria-Medina.—p. 464.

Some Epidemiological Observations on Tularemia in California 1927-1951. S. A. Simons, I. M. Stevens and W. C. Reeves.—p. 483.

Filariasis in American Samoa: III. Studies on Chemotherapy Against Nonperiodic Form of Wuchereria Bancrofti. G. F. Otto, L. A. Jachowski Jr. and J. D. Wharton.—p. 495.

Paragonimiasis: Failure of Nilodin in Therapy and Report of One Case with Urinary Tract Involvement. P. P. Weinstein, L. J. Duman, G. S. Trelawny and J. C. Patterson.—p. 517.

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Annals of Internal Medicine, Lancaster, Pa.

38:913-1114 (May) 1953

Use of ACTH and Cortisone in Treatment and in Differential Diagnosis of Malignant Exophthalmos: Preliminary Report. L. W. Kinsell, J. W. Partridge and N. Foreman.—p. 913.
Hyperventilation Syndrome. B. I. Lewis.—p. 918.
Remission of Intractable Allergic Symptoms by Acute Intercurrent Infections. J. H. Fries and S. Borne.—p. 928.
Serum Potassium Patterns in Anuria and Oliguria. J. Hopper Jr., B. P. O'Connell and H. R. Fluss.—p. 935.
*Long-Term Evaluation of Aureomycin in Treatment of Actinomycosis. L. V. McVay Jr. and D. H. Sprunt.—p. 955.
Developmental Bronchial Cysts. S. G. Baxter and J. F. Meakins.—p. 967.
*Pure Mitral Insufficiency of Rheumatic Origin in Adults. E. R. Movitt and B. Gerstl.—p. 981.
*Experiences in Diagnosis and Antibiotic Therapy of Amebiasis: An Analysis of 50 Cases. N. J. Weiser, E. Spiotta and P. Ekman.—p. 1002.
Testing for Antibiotic Sensitivity in General Hospital. A. J. Weill and L. Harris.—p. 1027.
Plasma Cell Myeloma. G. C. Meacham.—p. 1035.

Aureomycin in Actinomycosis.—Seven of 10 patients with actinomycosis observed at the John Gaston Hospital and the University of Tennessee College of Medicine were treated with aureomycin. Six patients had cervicofacial actinomycosis and one had hepatic actinomycosis and a hepatic abscess caused by Actinomyces bovis and Bacteroides funduliformis. Aureomycin in doses of 750 mg. administered orally every six hours for 10 days and thereafter in doses of 500 mg. every six hours for 18 days was effective in cervicofacial actinomycosis. In four patients with localized cervicofacial actinomycosis the follow-up periods were 36, 33, 32, and 25 months respectively; in three of these actinomycosis followed extraction of teeth. There were no recurrences of the disease in these patients. The patient with hepatic actinomycosis who had been critically ill was entirely asymptomatic 30 months after treatment with aureomycin; he was working regularly and had maintained his normal weight for more than two years. Results of serial hematological examinations remained normal. Prolonged treatment with aureomycin by the intravenous route may be required in this severe form of the disease. Observation for five years following treatment may be necessary to establish definitely the cure of systemic or visceral actinomycosis. The authors consider aureomycin an effective agent in the treatment of localized and disseminated actinomycosis. Aureomycin exerts a definite inhibitory effect on Actinomyces bovis in vitro.

Pure Mitral Insufficiency of Rheumatic Origin.—At necropsy after death from heart disease in 44 cases, 5 cases of pure and isolated incompetence of the mitral valve were found without deformity of any other valve, pericarditis, hypertension, coronary artery disease, syphilis, or any other but rheumatic cardiac involvement except for bacterial endocarditis in one patient. In four of the five patients death resulted from mitral regurgitation causing intractable fatal congestive heart failure. In none was there any clinical or pathological evidence of an active rheumatic process. Modern textbooks and the current literature create the impression that in adults fatalities from heart failure occur only rarely during pure mitral insufficiency. The evidence presented here shows that death from this cause may occur in adults, even in advanced middle life, more frequently than is currently believed. All four patients had a loud, harsh systolic murmur, heard over the entire precordium, with maximal intensity over the apex, and radiation to the axilla, lung base, and along the spine as far down as the sacrum. The authors believe that even in the absence of a history of rheumatic fever, a murmur of this type, with or without an accompanying thrill, in combination with left atrial and ventricular enlargement, constitutes in adults a sign pathognomonic of organic mitral regurgitation. Sclerosis of the pulmonary vascular system was not observed in the authors' patients with pure mitral insufficiency.

Diagnosis and Antibiotic Therapy of Amebiasis.—Diagnosis of amebiasis of the colon or liver was made in 50 patients by sigmoidoscopy, by examination of mucus obtained by mucosal swabs, or by examination of feces. Sigmoidoscopy, with immediate examination of mucus, is the most practical method of diagnosis. It is easier and more productive than frequently repeated examinations of purged stools. Single stool specimens, or repeated specimens not obtained by purging, resulted in a low rate of successful diagnosis. Negative results shown by sigmoidoscopy and examination of the mucosal aspirate are essential criteria of cure. The use of less rigid criteria has resulted in the overenthusiastic and contradictory reports as to the efficacy of antibiotic drugs. Of 40 patients with intestinal amebiasis 27 were treated with oxytetracycline (Terramycin) and 13 with aureomycin; amebas were still found in 17 cases after one course of oxytetracycline and in 13 after a second course. Specimens from 4 of these 13 patients became negative after a seven day course of oxytetracycline and emetine. Five of the 13 patients treated with aureomycin were therapeutic failures. The use of antibiotics for the intestinal form of the disease was not only disappointing in failure to obtain cure but also in the development of serious untoward effects on prolonged treatment. The results with antibiotics were no better than those previously reported with potentially less toxic drugs. Results with chloroquine and emetine in the hepatic form of the disease were variable. Reinfection from uncontrolled intestinal amebiasis may give a false picture of the efficacy of these drugs. Eight illustrative cases are described, placing emphasis on the unusual clinical pictures that may occur and on the need for awareness of the prevalence of amebiasis in both civilian and military medicine.

Arkansas Medical Society Journal, Fort Smith

49:213-232 (May) 1953

Solitary Pelvic Kidney: Report of Case and Review of Literature. R. A. Downs.—p. 213.
Group Psychotherapy. E. Parsons.—p. 219.

50:1-28 (June) 1953

Ectopic Pregnancy (Tubal Abortion) in Rudimentary Horn of Uterus, Associated with Renal Agenesis. J. J. Monfort.—p. 18.
A New Partnership. J. W. Smith.—p. 19.

Cancer, Philadelphia

6:427-640 (May) 1953

Testicular Tumors: Clinicopathological Study. F. J. Dixon and R. A. Moore.—p. 427.
Gonadoblastoma: Gonadal Tumor Related to Dysgerminoma (Seminoma) and Capable of Sex-Hormone Production. R. E. Scully.—p. 455.
Experimental Teratomas of Testis. R. L. Carleton, N. B. Friedman and E. J. Bomze.—p. 464.
Guilt Reactions in Patients with Cancer. R. D. Abrams and J. E. Finesinger.—p. 474.
Hormonal Therapy in Cancer of Breast: V. Effect of Methyltestosterone on Clinical Course and Hormonal Excretion. A. Segaloff, B. N. Horwitt, R. A. Carabasi and others.—p. 483.
Inflammatory Fibroid Polyps of Stomach. W. K. Bullock and E. T. Moran.—p. 488.
Phaeochromocytoma in Rat: Pathogenesis and Collateral Reactions and Its Relation to Comparable Tumours in Man. J. Gillman, C. Gilbert and I. Spence.—p. 494.
Neuroblastoma of Suprarenal Medullary Anlage with Metastasis to Brain. B. Halpert, C. Pollard Jr. and T. H. McGuire.—p. 512.
Technique of Radical Vulvectomy for Carcinoma of Vulva. G. H. Twombly.—p. 516.
*An Autopsy Study of Latent Prostatic Cancer. C. N. Edwards, I. Steinthorsson and D. Nicholson.—p. 531.
*Peripheral and Multiple Bronchial Adenomas. W. L. Felton II, A. A. Liebow and G. E. Lindskog.—p. 555.
Technique of Immediate Bone Grafting in Treatment of Benign and Malignant Tumors of Mandible and Review of 17 Consecutive Cases. J. J. Conley.—p. 568.
Primary Melanocarcinoma of Esophagus: Third Histologically Proved Case. W. K. Bullock, H. L. Thompson and G. Gregory.—p. 578.
Chondrosarcoma of Extraskeletal Soft Tissues. A. P. Stout and E. W. Verner.—p. 581.
*Remissions in Leukemia of Childhood Following Acute Infectious Disease: Staphylococcus and Streptococcus, Varicella, and Feline Panleukopenia. H. R. Bierman, D. M. Crile, K. S. Dod and others.—p. 591.
Cellular Study of Lymph-Node Imprints. R. D. Moore and J. W. Reagan.—p. 606.
In Vivo Localization of Anti-Wagner-Osteogenic-Sarcoma Antibodies. D. Pressman and L. Korngold.—p. 619.
Delay in Diagnosis and Treatment of Physicians with Cancer. G. F. Robbins, M. C. Macdonald and G. T. Pack.—p. 624.

Autopsy Study of Latent Prostatic Cancer.—The authors studied two series of autopsies in patients 40 or more years of age. In one series, the incidence of latent prostatic cancer

was 14.8% in 81 cases; in the other series, it was 16.6% in 173 cases. The morphology of the small latent cancers appeared similar to that of clinically manifest prostatic carcinoma, although there was less infiltration. Early carcinoma originated from the peripheral prostatic tubules in 87.5% of cases; it was not infrequently multicentric. A statistically significant relationship could be demonstrated between prostatic carcinoma and benign hyperplasia; the nature of this association remains obscure. No statistically significant relationship could be demonstrated between prostatic carcinoma and prostatitis, prostatic calculi, or primary malignant disease in other body regions.

Peripheral and Multiple Bronchial Adenomas.—Bronchial adenomas may be termed "carcinoid" or "cylindroid" according to their resemblance to such neoplasms in other organs without implying any definite histogenesis. Although some of these tumors are locally invasive and capable of metastasizing, their development differs sharply from that of the much more rapidly progressive, destructive, and disseminating bronchogenic carcinoma. Bronchial adenomas occur predominantly in the main stem or lobar bronchi. This report deals with four cases of peripheral bronchial adenoma. In two patients of this series the lesions were multiple, and the evidence indicated that metastasis had not occurred. One of these offered a unique opportunity to study the histogenesis of peripheral bronchial adenoma. Both of these patients underwent pulmonary resection, and in the other two the tumors were found at necropsy. Observations on these four cases demonstrate that tumors with the structure of bronchial adenoma can originate in small bronchi or bronchioles and possibly even in respiratory bronchioles; that such lesions may be multiple is exemplified in two. The absence of lymphatic or lymph node involvement, together with other evidence such as the diversity in structure of adenomas of different sizes, suggests that these tumors were multicentric in origin rather than the result of intrapulmonary metastasis. In such a peripheral position there is evidence, based on the study of serial sections from one lesion, that bronchial adenomas can arise from the epithelial lining. This does not deny their possible origin from mucous glands or their ducts when they arise in their usual position within proximal bronchi. These smallest lesions are not encapsulated, and their component cells tend to have scanty cytoplasm and an acinar arrangement with a tendency to line preexisting respiratory passages. In one patient it was possible to trace numerous transitional forms from such lesions to larger tumors of the usual structure. More data are needed concerning the age incidence of these peripheral adenomas that, in the experience of these authors, appear to occur in an older age group than the more central lesions.

Remissions in Leukemia After Infections.—Sporadically during the last 75 years there have been reports suggesting that severe infections may sometimes favorably modify the course of far-advanced neoplastic disease. More recently, attention has again been directed to the association of acute infections with clinical remissions of leukemia in children. Bierman and associates present case histories of 11 children in whom infections developed in the course of lymphatic leukemia. Marked clinical and hematological remission of the leukemia was seen in two children with hemolytic Staphylococcus septicemia, in one child with varicella, and in one child who was infected with the feline panleukopenia virus. Similar but less complete effects were observed in six other children. The sequence of events in these remissions is as follows: A child with acute lymphatic leukemia, with a high or a low leukocyte count and with or without a marked granulopenia, contracts an infection that is followed by fever, drop in the peripheral leukocyte count, and occasionally by a hypoplastic phase in the bone marrow. If the patient survives this phase, the hemogram returns toward normal and a temporary clinical remission may occur. In all cases the leukemic process returned, and no evidence is available from the present data that such remissions were associated with a significant prolongation of life. The authors feel that the rapid and almost complete return toward normal hematological and clinical appearance in some children with fulminant leukemia following acute infections is a strong indication that some major features of leukemia are reversible.

Diabetes, New York

2:171-256 (May-June) 1953

Clinical Features of Diabetic Acidosis and Coma. E. P. McCullagh. p. 171.
Treatment of Diabetic Coma. H. Pollack.—p. 177.
Pathology of Diabetes Mellitus. J. D. Hamilton.—p. 180.
Diabetes in Iceland. V. Albertsson.—p. 184.
Diabetes in Two Ontario Communities: Studies in Case Finding. A. J. Kenny and A. L. Chute.—p. 187.
Incidence of Peripheral Vascular Changes in Diabetes Mellitus: Survey of 264 Cases. O. Brandman and W. Redisch.—p. 194.
Neurogenic Bladder Dysfunction as Complication of Diabetes: Report of Seven Cases. M. Spring and J. Hymes.—p. 199.
Serum Cholesterol in Juvenile Diabetes: Serial Determinations in Cases of Recent Onset. M. S. Dine and R. L. Jackson.—p. 206.

Endocrinology, Springfield, Ill.

52:489-610 (May) 1953. **Partial Index**

Thyrotropin Assay Based on Depletion of Iodine in Chick Thyroids. L. J. Piotrowski, S. L. Steelman and F. C. Koch.—p. 489.
Correlation of Preparative History and Method of Assay of Corticotropin with Clinical Potency. R. E. Thompson and J. D. Fisher.—p. 496.
Experimental Exophthalmos in Rats Produced by Cortisone. K. Aterman and S. M. Greenberg.—p. 510.
Nitrogen Balance, Liver Protein Repletion and Body Composition of Cortisone Treated Rats. R. H. Silber and C. C. Porter.—p. 518.
Radioiodine Metabolism in Chick Embryo. S. H. Wollman and E. Zwilling.—p. 526.
Effect of Growth Hormone on Tibia Glycogen Content of Hypophysectomized Rat. S. Ellis, M. E. Simpson and H. M. Evans.—p. 554.
Enterohepatic Circulation of Thyroxine in Rat. F. N. Briggs, A. Taurog and I. L. Chaikoff.—p. 559.
Effects of Iodide, Perchlorate, Thiocyanate, and Nitrate Administration Upon Iodide Concentrating Mechanism of Rat Thyroid. J. B. Wyngaarden, J. B. Stanbury and B. Rapp.—p. 568.
Adrenal Cortex and Sulfur Metabolism. J. W. Goldzieher, W. B. Rawls and M. A. Goldzieher.—p. 575.
Comparison of Ovarian and Pituitary Hormones for Maintenance of Pregnancy in Pyridoxine-Deficient Rats. M. M. Nelson, W. R. Lyons and H. M. Evans.—p. 585.
Progesterone Content of Human Placental Blood. W. H. Pearlman and M. Thomas.—p. 590.
Detectable Amounts of ACTH in Blood Following Salicylate Administration. C. H. Eades Jr. and J. S. King Jr.—p. 594.

GP (J. Am. Acad. Gen. Practice), Kansas City, Mo.

7:1-194 (June) 1953

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Small Temperature Charts for Physician. I. Drabkin.—p. 40.
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Acute Renal Failure. J. P. Merrill.—p. 55.
Auscultation in Diagnosis of Intracranial Disease. C. W. Burklund.—p. 63.
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Hazards of Blood Transfusions. C. E. Rath.—p. 67.

Industrial Medicine and Surgery, Chicago

22:191-236 (May) 1953. **Partial Index**

Prostatism and Its Implications with Reference to Medical Programs in Industry. M. R. Wolf.—p. 196.
Occupational Dermatoses. H. Rattner.—p. 198.
*Problem of Noise in Industry: Urgent, Imminent, Fraught with Danger. C. R. Walmer.—p. 202.
Employee Health Audit by Questionnaire. R. A. Hicks and N. B. Walker.—p. 211.
Manganese Poisoning in Mines of Cuba: Preliminary Report. M. G. Avila and R. P. Ballina.—p. 220.

Noise in Industry.—Managers of factories are beginning to realize that compensation claims for occupational loss of hearing may become more numerous. In one state compensation claims for occupational loss of hearing amounting to more than 5 million dollars have been filed against one company alone. In Wisconsin some 40-odd cases originating in two drop forge plants were filed. It is estimated that there are from 25,000 to 100,000 potential cases in Wisconsin that are being held up pending judgment of the State Supreme Court

In a test case in which the Industrial Commission held that wage loss is not necessary, because loss of hearing is a schedule injury in that state. A bill has been introduced in the Wisconsin legislature asking that hearing loss cases be put on a wage-loss basis. Under this bill, as introduced, compensation would not be payable for occupational hearing loss unless there was a wage loss, and the maximal benefits would be set at $3,500. The author calls attention to some of the complexities, such as how to distinguish between occupational and nonoccupational loss of hearing. A standard technique must be established for measurements of hearing impairment. Related problems must be studied, such as the effect of vibration upon hearing and the development of tests that might predict which persons are unusually susceptible to hearing impairment. Recognizing that unless there is close cooperation and coordination of research, much time and money will be dissipated in the study of the problem of noise in industry, representatives of a number of interested groups have asked the Industrial Hygiene Foundation to participate as the coordinating agency in a program designed to provide practical information that can be used for developing control measures and for establishing regulations that will be equitable and practical. The important objectives of such a study are to find and define basic criteria for the appraisal of the effects of noise on hearing; to establish a correlation between loss of hearing and exposures to noise intensity levels in the various frequency bands; to evolve control procedures to reduce noise to acceptable levels; and to develop evidence that may lead to establishment of equitable regulations for coping with the legal aspects of the problem.

Journal of Allergy, St. Louis

24:193-288 (May) 1953

*Disability Due to Inhalation of Grain Dust. V. L. Cohen and H. Osgood. —p. 193.

Studies in Reaginic and Histaminic Wheals: II. Effect of Locally Administered Antihistamine on Passive Transfer Reaction. B. B. Siegel, K. L. Bowman and M. Walzer.—p. 212.

Acute Asthmatic Episodes in Children Caused by Upper Respiratory Bacteria During Colds, With and Without Bacterial Sensitization. F. A. Stevens.—p. 221.

Influence of Adrenalectomy and Cortisone on Anaphylactic Heart Reaction in Rabbits. G. Mikulicich and Y. T. Oester.—p. 227.

*Allergy in Identical Twins. R. Bowen.—p. 236.

Use of Cortisone in Postinfection Encephalitis: Report of Case. L. L. Henderson.—p. 245.

Free Amino Groups of Ambrosia Elatior Pollen Proteins. R. B. Pringle. —p. 251.

Absorption of Antigen from Mammary Ducts. S. F. Livingston and M. Harten.—p. 258.

Bristamin, a New Antihistaminic Drug. L. E. Seyler and S. W. Simon. —p. 261.

Education and Advancement in Allergy. J. W. Thomas.—p. 264.

Disability Due to Inhalation of Grain Dust.—Respiratory disability is reported in 11 workers from grain elevators and feed mills in the Buffalo, N. Y., area. Each worker had been referred to an allergist because of symptoms suggestive of asthma. There was progressive dyspnea at rest and on exertion, cough, and frequently "wheezing." Each of these men had worked in the environment of crude grain dust for 10 years or more before well-pronounced symptoms appeared. All attributed their symptoms to the inhaled dust. The onset of symptoms was gradual. The symptoms, especially the dyspnea, showed a progressive increase until they became disabling. Examination showed evidence of chronic bronchitis, recurrent bronchial obstruction, and clinically apparent emphysema in 8 of the 11 patients. Nine of the 11 were tested with extracts of crude grain dust. Five of the patients were considered sensitive to grain dust and four were not. Four of the 11 patients died while under observation, and necropsies were performed in 3 of these. Pathological findings consisted of pronounced pulmonary fibrosis and emphysema, with cor pulmonale in two. There was no evidence of silicosis or fungus disease. The authors believe that workers handling crude grain may become allergically sensitive to crude grain dust or to some of its allergenic components, and that this sensitivity can result in disabling respiratory disease when the exposure is continued over a long period of time. Allergic sensitivity to crude grain dust is not the only causative factor in the production of the grain handler's disease. Crude grain dust inhaled over a long period of time can induce disabling respiratory symptoms and pulmonary changes in the absence of allergic sensitivity. The authors suggest that experimental work on lower animals should be carried out to determine whether exposure over long periods to an atmosphere laden with grain dust can induce chronic pulmonary changes or allergic sensitivity or both.

Allergy in Identical Twins.—In only 7 of 59 pairs of monozygotic, identical twins studied by Bowen were allergies present in both twins. The youngest pair was 8 weeks old, and the oldest 56 years; most were between 6 and 15 years of age. In the seven pairs of twins in which both had allergies three pairs had juvenile eczema, and in two of these asthmatic symptoms occurred later. Two other pairs had severe pollinosis of the perennial and ragweed types. Two others had classical bronchial asthma. In some of the remaining 52 pairs some of the twins had bronchial asthma with coexisting nasal blockage, but in this group only one of each pair was affected to such a degree that medical help was sought. The fact that in only seven pairs was there true allergy of similar pattern in both twins contradicts the concept that allergic manifestations are the result of placental transference. Many of these children were as young as 2 months when they first experienced their symptoms, which poses an interesting problem for the proponents of maternal rejection as an etiological factor. Brain wave studies were made in three pairs of twins; findings tended to be similar irrespective of the presence or absence of active allergy. The results of this survey also challenge the concept that maternal dietary restrictions during pregnancy will make allergy less likely to appear in the newborn.

Journal of Applied Physiology, Washington, D. C.

5:647-724 (May) 1953

Glycolysis of Blood in Diabetic Acidosis. D. M. Kydd, A. J. Heinsen, P. M. Hald and J. P. Peters.—p. 647.

Influence of Tonicity of Body Fluids on Rate of Excretion of Electrolytes. J. H. Darragh, L. G. Welt, A. V. N. Goodyer and W. A. Abele.—p. 658.

Dynamic Effects of Low Oxygen Tension of Inspired Air on Alveolar Gas Tensions. R. W. Stacy and F. A. Hitchcock.—p. 665.

Adaptive Changes During Exposure to Cold. L. D. Carlson, H. L. Burns, T. H. Holmes and P. P. Webb.—p. 672.

Pulse Rate, Blood Pressure and Vision After Cold Hip Bath. A. H. Steinhaus and G. Wendhut.—p. 677.

Gas Diffusion Technique for Measurement of Renal Blood Flow with Special Reference to Intact, Anuric Subject. H. L. Conn Jr., W. Anderson and S. Arena.—p. 683.

Morphological Subdivision of Q-T Interval and Its Relation to Cardiac Rate. D. Gross.—p. 690.

Potential Field During ST Segment. L. H. Nahum, A. Mauro, H. Levine and D. G. Abrahams.—p. 693.

Instantaneous Equipotential Distribution on Thoracic Surface of Human Subjects with Cardiac Pathology. A. Mauro, L. H. Nahum and R. Sikand.—p. 698.

*Effect of Vagotomy on Gastric Evacuation of High-Fat Meals. W. R. Waddell and C. C. Wang.—p. 705.

In Vitro Assay of Cholecystokinin Concentrates. L. L. Gershbein, R. W. Denton and B. W. Hubbard Jr.—p. 712.

Artificial Respiration Adapted to Special Conditions. P. V. Karpovich and C. J. Hale.—p. 717.

Effect of Vagotomy on Gastric Evacuation of High-Fat Meals.—The presence of fat within the upper intestine has been shown to depress the secretory and motor activity of the stomach. The role of the vagus nerves and the part played by reflex mechanisms in controlling gastric evacuation after fatty meals have been studied in animals, and the conclusions reached were that reflexes mediated over the parasympathetic nerves did not influence the behavior of the stomach significantly. New evidence concerning these problems obtained by simple techniques on human subjects are presented. It was found that the introduction of a high-fat meal into the normal stomach or one with a gastroenterostomy is followed by prolonged delay in gastric emptying. This effect is abolished by partial gastrectomy or by vagotomy in the presence of a gastroenterostomy. This seems to indicate that gastric

evacuation after fatty meals is largely controlled by nervous reflex mechanisms mediated via the vagus nerves; this is contrary to previous findings and incompatible with some presently accepted theories.

Journal of Bacteriology, Baltimore

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Genetic Studies on Development of Streptomycin Resistance in Pasteurella Pestis. E. D. Garber, K. Noble and N. Carouso.—p. 485.
Effect of Free Amino Acid Pool Levels on Induced Synthesis of Enzymes. H. O. Halvorson and S. Spiegelman.—p. 496.
Effect of Sodium Azide on Radiation Damage and Photoreactivation. H. Berger, F. L. Haas, O. Wyss and W. S. Stone.—p. 538.
Nitrogen Metabolism of Certain Strains of Mycobacterium Tuberculosis. F. Bernheim, W. E. DeTurk and H. Pope.—p. 544.
Metabolism of Brucellae: Role of Cellular Permeability. P. Gerhardt, D. R. MacGregor, A. G. Marr and others.—p. 581.
Tracer Studies of Formate Metabolism in Fungi. W. E. Jefferson and J. W. Foster.—p. 587.

Journal of Bone and Joint Surgery, Boston

35-A:285-538 (April) 1953. **Partial Index**

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Tendon Transplantations in Median-Nerve and Ulnar-Nerve Paralysis. D. C. Riordan.—p. 312.
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Manipulation of the Spine. E. G. Ewer.—p. 347.
Problems of Postoperative Position and Motion in Surgery of Hand. J. M. Brunet.—p. 355.
Hip Fractures: Role of Muscle Contraction or Intrinsic Forces in Causation of Fractures of Femoral Neck. L. D. Smith.—p. 367.
Experiences with Muscle-Transplant Operation for Relief of Painful Arthritis of Hip. M. H. Meyers.—p. 384.
Horizontal Lateral Roentgenography of Hip in Children: Preliminary Report. H. Laage, J. C. Barnett, J. M. Brady and others.—p. 387.
*Chordoma of Lumbar Vertebra. H. W. Baker and B. L. Coley.—p. 403.
Cystic Angiomatosis of Skeletal System. J. E. Jacobs and P. Kimmelstiel.—p. 409.
Surgical Treatment of Epicondylitis. G. E. Spencer Jr. and C. H. Herndon.—p. 421.
Surgical Management of Friedreich's Ataxia. M. Makin.—p. 425.
The Möbius Syndrome. R. N. Richards.—p. 437.
*Multiple Lesions of Bone in Letterer-Siwe Disease: Report of Case with Culture of Paracolon Arizona Bacilli from Bone Lesions and Blood, Followed by Response to Therapy. R. H. Fisher.—p. 445.
Sarcoid Disease of Bone at Ankle Joint. S. L. Turek.—p. 465.

Chordoma of Lumbar Vertebra.—Chordoma is a slow-growing malignant tumor that arises from elements of the primitive notochord. Over 300 cases of chordoma have been reported. The lesion most commonly arises in the sacrococcygeal region. Cranial chordomas are next in frequency. These usually arise in the sphenoid or the spheno-occipital region. Chordomas arising in the vertebral region are the least common, comprising less than 15% of the known cases. The vertebral lesions occur oftenest in the lumbar region. Observations on a new case of vertebral chordoma are presented. The patient, a 39-year-old man, was admitted to the bone tumor service in November, 1951, with the chief complaint of low back pain. The patient had sustained a back injury in an automobile accident in 1943, but after that he had no back symptoms until April, 1951, when he had an episode of dull continuous low back pain lasting 10 days and subsiding without treatment. In September, 1951, while he was bending, a severe pain developed in the midlumbar region, radiating into the right thigh and knee. The patient was admitted to his community hospital with a provisional diagnosis of herniated intervertebral disk. He was treated for 10 days by traction on the right lower extremity, followed by application of a plaster jacket. These measures relieved the back pain only slightly. Films of the lumbar portion of the spine revealed an irregular area of bone destruction involving the posterior two-thirds of the body of the third lumbar vertebra. An aspiration biopsy of this vertebra revealed only blood and calcified debris. On Nov. 14, 1951, the lumbar spine was explored surgically and a biopsy specimen obtained. At operation, a diffuse area of softening and bone destruction was encountered in the lamina of the third lumbar vertebra. The bone was replaced by a mass of soft, rather gelatinous material that was brick-red in color. On the basis of an immediately air-fixed smear of the specimen stained with hematoxylin and eosin a diagnosis of chordoma was made; the microscopic appearance was typical. Following operation, the patient was fitted with a spinal brace that allowed him to become ambulatory, and x-ray therapy was started. A tumor dose of 1,560 r was given in two weeks. The therapy was then continued on the million-volt machine. A total tumor dose of 3,940 r was delivered to the third lumbar vertebra in slightly less than one month. The patient was symptomatically improved within a month after completion of the radiation therapy. The patient has been followed regularly in the bone tumor clinic and has shown continued improvement. Roentgenographic examination of the spine in September, 1952, disclosed no activity of the disease.

Multiple Bone Lesions in Letterer-Siwe Disease.—Fisher reports a case of Letterer-Siwe disease that provided an opportunity to investigate the development and healing of the bone lesions and revealed what appears to be the causative organism. The patient presented roentgenographic evidence of multiple destructive and productive lesions of the long bones, skull, and ribs, associated with generalized lymphadenopathy, fever, rapid pulse, anemia, and slightly depressed leukocyte count. A progressive course brought the patient close to death in eight months. The patient, a 2-year-old boy, responded to antibiotic therapy. This is the fifth case of Letterer-Siwe disease in the past two years in which clinical cure was obtained by treatment with antibiotics. Over the course of a year, six surgical biopsies were done. The original biopsy specimen showed nonlipid histiocytosis compatible with Letterer-Siwe disease. The second specimen showed the development of a lipid histiocytosis. The blood and tissue cultures revealed paracolon bacilli of the Arizona group. The author feels that Letterer-Siwe disease should no longer be considered inevitably fatal. This case strongly supports the concept of an inflammatory basis for this group of diseases. The findings in serial biopsy specimens also support the concept that Letterer-Siwe disease and Hand-Schüller-Christian disease are the same disease in different histological phases. Multiple biopsies and blood cultures are indicated for identification of causative organisms in similar cases. Antibiotic treatment is indicated even in the absence of a bacterial culture. The antibiotics of choice are probably chloramphenicol and oxytetracycline (Terramycin). Penicillin seems to be the least effective antibiotic against organisms likely to cause the condition.

Journal of National Medical Association, New York

45:163-236 (May) 1953. **Partial Index**

*Pulmonary Air Cysts: Some Diagnostic, Physiologic and Therapeutic Considerations. K. A. Harden.—p. 167.
Influence of Dietary Supplements on Hemoglobin, Erythrocytes, and Outcome of Pregnancy in Anemic Women. C. H. Edwards, J. R. Mitchell, F. J. McEnge and others.—p. 180.
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"Managing Physician" Concept in Practice of Medicine. A. N. Koplin and H. C. Daniels.—p. 196.
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Cancer of Female Genitalia: Comments on 10 Year Experience at Homer G. Phillips Hospital. W. L. Smiley.—p. 216.
Further Report on Use of Diethylstilbestrol in Treatment of Threatened Abortion. J. W. Ross.—p. 223.

Pulmonary Air Cysts.—Harden discusses air cysts on the basis of observations on 16 patients at Bellevue and 10 at Freedman's Hospital. The patients were from 18 to 69 years old, and all but 6 were men. The most frequent signs and symptoms were pulmonary emphysema, respiratory difficulty, cyanosis, wheezing, dyspnea, cough, chest pain, hemoptysis, repeated respiratory infections, and pneumonia. Four groups of cases are differentiated, on the basis of the bronchial communication and the functional state of the remaining lung. In the group 1 patients, in whom large air cysts communicate with the bronchial tree, the maximum breathing capacity was normal or slightly reduced. The patients of group 2

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had large cysts with poor or intermittent bronchial communication but the remaining lung was apparently normal. The total lung volume was greatly restricted in all cases of group 2. The spirogram showed expiratory obstruction and air trapping. Irregularity of the respiratory movements was also observed. Patients of group 3a had air cysts with poor or intermittent bronchial communication associated with chronic diffuse emphysema in the remaining lung. The maximum breathing capacity was severely restricted but improved with bronchodilator drugs. Patients of group 3b also have low oxygen and high carbon dioxide tension in the alveolar air, which is reflected in the unsaturation of arterial blood that may result in cyanosis. Efforts should be made to prevent respiratory infections in patients with pulmonary air cysts, but, when respiratory infection develops, it should be combatted with antibiotics and chemotherapy. The use of oxygen may benefit these patients, particularly when heart failure or pneumonia develops, but hazards connected with the use of oxygen should be kept in mind. If the symptoms are severe enough to interfere with the patient's ability to work or are otherwise unduly incapacitating, surgical treatment is indicated for group 1 patients. In group 2 patients, surgery is the treatment of choice when the condition of the patient permits it. The use of surgery in group 3a depends largely on the condition of the patient, that is, whether he would survive surgery, and also whether he would still have respiratory insufficiency. The patients in group 3b have ventilatory and alveolar respiratory insufficiency. Even if they survive the operation, the symptoms may be intensified and hence surgical treatment is not advisable in the majority of these patients. Surgical treatment is indicated primarily when the other lung is normal and in some cases when the emphysematous changes in the other lung are not complicated by alveolar respiratory insufficiency.

Kentucky State Medical Assn. Journal, Bowling Green

51:229-276 (June) 1953

Observations and Experiences with Isonicotinic Acid Hydrazide (INH). J. F. W. Stewart.—p. 229.
Rationale of Good Control in Diabetes Mellitus. A. R. Colwell.—p. 238.
Encouraging and Discouraging Research with Therapeutic Radioisotopes. M. Brucer.—p. 243.
Hydatidiform Mole and Chorionepithelioma. J. R. Freedman and R. Greco.—p. 247.
Management of Carcinoma of Cervix. J. Love, I. H. Sonne Jr. and R. Greco.—p. 251.
Obligations of Individual Physician in the State Medical Profession in Civil Defense: Committee on Medical Emergency Service. G. Y. Graves, T. W. Gudex, L. Payton and others.—p. 254.

Maryland State Medical Journal, Baltimore

2:223-292 (May) 1953

Surgical Approach in Treatment of Pulmonary Tuberculosis. O. C. Brantigan.—p. 228.
Etiological Considerations and Prevention of Rheumatic Fever. C. M. MacLeod.—p. 236.
Diagnosis and Management of Common Gynecological Problems. W. J. Reich, M. W. Rubenstein and J. B. Reich.—p. 241.
Parenteral Nutrition. W. R. Waddell.—p. 244.

Medical Annals of District of Columbia, Washington

22:221-278 (May) 1953

*Use of Benzotropine Sulfonate in Treatment of Parkinsonism. D. O'Doherty and F. M. Forster.—p. 221.
Poisoning from Carbon Tetrachloride Used in Removing Adhesive Tape from Skin. B. L. Hardin Jr.—p. 224.
Unorthodox Working Concepts for Psychotherapy. D. E. Cameron. —p. 226.
Cesarean Hysterectomy: Review of 46 Cases. S. M. Dodek, J. M. Friedman, H. P. Treichler and S. G. DeCastro.—p. 235.
Pheochromocytoma and Hypertension. R. G. Taylor.—p. 240.

Benzotropine Sulfonate in Parkinsonism.—Since the atropine series has long been known to include the most efficacious antiparkinsonism drugs and since antihistaminic drugs offered some promise in therapy, an attempt was made to combine the two chemical groups. A preparation known by its experimental number MKO-2, or benzotropine sulfate, was used in 24 patients; in 10 the parkinsonism was due to arteriosclerosis and in 14 was postencephalitic. Tremor and rigidity were present in all 24 patients, but in 10 patients tremor predominated; in 7 patients tremor and rigidity were equally incapacitating. Oculogyric crises occurred in three patients. One patient was bedridden and six patients were ambulatory but could not engage in any useful activity; 14 patients were able to carry on minor activities, and 3 patients were able to continue their usual activities. Benzotropine sulfate was administered in tablets containing 0.5, 1.0, or 2.0 mg. The total dose per patient varied from 1.5 to 6.0 mg. per day. Six of the patients had received no antiparkinsonism therapy prior to the administration of benzotropine sulfate; 18 had previously received other medications. The patients were followed for from 3 to 12 months while receiving benzotropine sulfate. Although no patient could be classified as recovered while under treatment with benzotropine sulfate, 3 showed great improvement, 14 showed moderate to slight improvement, 9 showed moderate improvement, and 5 fair improvement. Seven failed to improve. In no patient was the parkinsonism made worse by benzotropine sulfate. The authors conclude that benzotropine sulfate is an effective agent in the treatment of parkinsonism, comparing favorably with previously tried medications and tending to be more effective in severer cases. There are fewer toxic effects with comparable doses than with other atropine drugs.

Military Surgeon, Washington, D. C.

112:315-394 (May) 1953. **Partial Index**

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Twelve Year Follow-Up Study of 1,056 U. S. Naval Flyers. A. Graybiel, J. M. Packard and J. S. Graettinger.—p. 328.
Hospital Ships in Korea. E. B. Coyl.—p. 342.

New England Journal of Medicine, Boston

248:837-874 (May 14) 1953

Study of 212 Home Accidents. J. J. DeCosse.—p. 837.
Gastritis and Gastroscopic Biopsy. S. Selesnick and E. D. Kinsella. —p. 842.
*Effect of Cortisone Therapy on Incidence of Rheumatic Heart Disease. A. L. Johnson and C. Ference.—p. 845.
*Use of Absolute Eosinophil Count in Diagnosis of Neoplasms: Preliminary Report. R. C. Murray.—p. 848.
Spatial Vectorcardiography: Review and Critique. L. Wolff, J. L. Richman and A. M. Soffe.—p. 851.

Effect of Cortisone Therapy on Incidence of Rheumatic Heart Disease.—An attempt was made to assess the effect of cortisone in rheumatic heart disease by comparing a group of 100 patients treated with cortisone and a group of 80 patients cared for under similar circumstances before cortisone was utilized. All of the children had active rheumatic fever, fulfilling the diagnostic criteria of Jones. Cortisone was given intramuscularly to 56 patients, the usual regimen being 200 mg. for two days and 100 to 150 mg. daily thereafter for 21 days. Ten patients received the hormone for 31 to 50 days. Cortisone was given orally to 32 patients in doses of 200 mg. for two days and 100 to 150 mg. daily for 28 days and to 6 patients for 40 to 84 days. Six patients received corticotropin intramuscularly in daily doses of from 40 to 60 mg. for 7 to 40 days. There was no significant difference in the incidence of heart disease in the group that received cortisone and the group that did not. During cortisone therapy the appearance of well-being and marked clinical improvement in some children with acute carditis is so striking that the similarity of the incidence of heart disease is surprising. The possibility that the mortality of acute rheumatic fever will be reduced by cortisone remains to be assessed.

Absolute Eosinophil Count in Diagnosis of Neoplasms.—Patients with pulmonary lesions and white blood cell counts of over 10,000 were selected for this study. Later only those with white blood cell counts of over 15,000 were studied. A total of 25 patients were investigated, and in addition 122 cases of carcinoma of the lung were reviewed to determine the incidence of leukocytosis. Of the 25 patients studied, 18 had a pulmonary neoplasm, 6 had lung abscess, and 1 had a lung cyst. Five of the 18 patients with carcinoma of the lung had roentgenologic pictures resembling lung abscess.

These five patients with necrotic tumors were found to have white blood cell counts above 30,000 and eosinophil counts above 500. These findings were compared with similar observations in six cases of lung abscess in which there was no eosinophilia associated with the leukocytosis. Records of 122 patients with carcinoma of the lung revealed that 3.3% had white blood cell counts over 30,000. In cases in which differentiation of a malignant from an infectious process is difficult, the eosinophil count may be a valuable test. This investigation suggests that the toxic effects of a necrotic neoplasm produce a leukocytosis involving all of the white blood cells. The absolute eosinophil count could be used in the differentiation of carcinoma from infection in these cases.

New York State Journal of Medicine, New York

53:1145-1272 (May 15) 1953

Resection Angulation Operation: Preliminary Report of Results. H. Milch. —p. 1201.
New Concepts of Therapy for Hemoglobin Regeneration. J. Pomeranze and M. Fastenberg.—p. 1206.
Organization of Cardiovascular Surgical Program: Preliminary Observations on Surgical Treatment of Patients with Mitral Stenosis. Montefiore Cardiovascular Conference. E. S. Hurwitt, Chairman.—p. 1209.
*Successful Irradiation Treatment of Malignancy Coexisting with Pregnancy. I. I. Kaplan.—p. 1215.
Sigmoidorectal Intussusception. E. Granet.—p. 1219.
*Clinical Experiences with Hexamethonium Chloride in Hypertension. I. Hirshleifer, G. Schwartz, S. I. Fishman and A. M. Fankhauser. —p. 1223.
Rehabilitation of Patient with Hemiplegia. D. A. Covalt.—p. 1225.

Irradiation Treatment of Malignant Disease in Pregnancy.—Two pregnant women with Hodgkin's disease and three pregnant women with cancer of the breast, lymphosarcoma and leukemia, respectively, were given x-ray irradiation treatment. With the exception of the women with leukemia, the patients were delivered of normal babies. The spleen area in the leukemic patient was irradiated, suggesting the advisability of terminating the pregnancy. Twin fetuses removed by hysterotomy showed no ill effects of irradiation. The patient died shortly after the operation. The patient with cancer of the breast had an apparent arrest of the malignant process for a time after the delivery. Her condition gradually deteriorated and she died. The patient with lymphosarcoma, whose lesions remained quiescent during pregnancy, manifested symptoms with enlargement of the lymph nodes in the neck after the delivery of her baby. X-ray treatment was repeated and she improved again. The two women with Hodgkin's disease are in good condition, and the children are normal and healthy. A sixth patient, a 42-year-old pregnant woman with cancer of the tongue, was given treatment with the 5 gm. radium pack through the right mandibular, right submental, and left mandibular areas. A total of 37,500 mg. hours was given to each area. There was a fair response to treatment, and the patient was delivered of a normal full-term infant. Two months after the delivery and after repeated radium pack treatment, there was localized and general improvement. The procedure to follow in a woman with a malignant lesion who is also pregnant depends on the extent and character of the malignant lesion and the stage of the pregnancy. Irradiation over the unborn fetus at an early state necessitates immediate therapeutic abortion. Irradiation to other parts of the body does not necessarily affect the well-being of the fetus. Because of the known stimulative effect of pregnancy on malignant tissues, women who have a malignant condition should not become pregnant and should be sterilized to prevent pregnancy. Irradiation of a pregnant uterus should be avoided. When this precaution is followed, children born of irradiated mothers are normal in every way.

Hexamethonium Chloride in Hypertension.—Hexamethonium chloride in doses of 1 to 4 gm. daily was given orally for from 2 days to 10 weeks to 15 patients with moderate to severe hypertension. The dose of the drug and the duration of treatment in each patient were determined by the degree of hypertension, the response to therapy, and the toxic reactions observed. Two of the 15 patients obtained excellent results, 1 good result, and 3 fair results, while 9 were therapeutic failures. Administration of the drug was discontinued in 12 of the 15 patients because of severe side-effects, such as blurred vision, vertigo, impotence, difficulty in urination, and constipation. Increased headache, vomiting, abdominal pain, perianal inflammation, dermatitis, and tinnitus were also noted. Two patients developed paralytic ileus, one of them after receiving 1 gm. of the drug for only two days. The toxic reactions of hexamethonium chloride overshadowed its beneficial effects. The magnitude and severity of the toxic reactions were unrelated to the dosage of the drug, there being pronounced variation in tolerance from patient to patient. Caution should be exercised in its use, and hospitalization is advisable.

North Carolina Medical Journal, Winston-Salem

14:177-220 (May) 1953

Challenges Facing Medical Profesion Today. J. S. Brewer.—p. 177.
School Psychological Clinics: II. New Developments and Results. J. R. Grassi.—p. 184.
Treatment of Metacarpal Fractures. E. J. Wells.—p. 195.
Malignancy of Female Urethra: Report of Eight Cases. J. F. Glenn. —p. 201.
Subcutaneous Beryllium Granuloma: Report of Case. W. R. Floyd and J. O. Williams.—p. 204.
Trigeminal Neuralgia: Conservative Management with Massive Vitamin B_{12} Therapy. E. Alexander Jr. and C. H. Davis Jr.—p. 206.

Pennsylvania Medical Journal, Harrisburg

56:321-416 (May) 1953

Diabetic Coma. E. P. Joslin.—p. 353.
Typhoid Fever in Brother and Sister Simultaneously. O. E. Turner. —p. 360.
Cerebrovascular Disorders. B. J. Alpers.—p. 365.

56:417-512 (June) 1953

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Preventive Measures Against Toxemia of Pregnancy. T. L. Montgomery. —p. 442.
Treatment of Common Skin Diseases. H. Beerman.—p. 446.
Translumbar Aortography. W. Baurys.—p. 451.
Purpura. L. H. Beizer.—p. 455.

Postgraduate Medicine, Minneapolis

13:487-588 (June) 1953

Emotional Factors Involved in Evaluation of Coronary Artery Disease. D. D. Bond.—p. 487.
Vagotomy in Treatment of Peptic Ulcer. P. Banzet.—p. 491.
Surgical Treatment of Osteoarthritis of Hip. E. L. Compere.—p. 495.
Lesions of Adrenal Glands of Surgical Significance. J. T. Priestley and R. M. Salassa.—p. 500.
Splenectomy for Blood Dyscrasias. W. D. Holden.—p. 507.
Breast Clinic. R. M. Janes.—p. 513.
Treatment of Pulmonary Tuberculosis. W. N. Davey.—p. 519.
Radioactive Iodine in Medical and Surgical Management of Goiter. M. T. Friedell.—p. 523.
Present Status of Treatment of Gastric Malignancy. S. F. Marshall. —p. 529.
Treatment of Burns by Exposure Method. C. P. Artz, E. Reiss, J. H. Davis and W. H. Amspacher.—p. 535.
*Simple Method for Detecting Salt Depletion Syndrome During Cardiac Therapy. J. J. Silverman.—p. 547.
Newer Drugs and Their Indications in Childhood. E. P. Crump.—p. 552.
Hard of Hearing Patient. H. P. House.—p. 563.
Aplastic Anemia. T. G. Schnabel.—p. 568.
Antiquity of Disease. F. Stenn.—p. 579.

Detecting Salt Depletion During Cardiac Therapy.—The low salt syndrome is a dangerous complication in the management of congestive circulatory failure, but it is not always correctly identified. Silverman describes a practical method for detecting this syndrome, which does not require complicated laboratory procedures. The method depends on observing the response of the urinary chlorides and the change in body weight following the administration of a test dose of a mercurial diuretic. Ordinarily, the diuresis obtained from mercurials results in a profuse excretion of chlorides and a loss of body weight. If, on the other hand, a depression of the urinary chloride is observed and at the same time there is a prompt gain or no loss of weight, the low salt syndrome should be suspected. At the start of the test the patient's weight is noted and a sample of urine is obtained. The diet remains unchanged, and the patient is urged to take fluids.

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A test dose of 1 cc. of one of the standard mercurial diuretics is administered intramuscularly. All urine is collected for four or eight hours and measured and tested for chlorides. A kit containing a test tube, a dropper, a 10% solution of potassium chromate, and a 0.73% solution of silver nitrate is all the equipment needed. The test is performed by placing 10 drops of urine in a test tube and adding 1 drop of the potassium chromate solution. A yellow-orange color is produced. To this mixture the silver nitrate solution is added drop by drop—the number of drops being counted—until the color changes to a reddish brown. Each drop of silver nitrate solution required to produce this color change represents 150 mg. of chloride per liter. The average person will normally demonstrate over 3 gm. (that is, 20 drops of the silver nitrate solution is required). A patient with the salt depletion syndrome will have extremely low levels of chlorides in the urine, often as low as 150 mg. (1 drop). In managing cardiac patients with a low salt diet and mercurial diuretics, testing the urine daily for chlorides yields important clinical data and should be more widely practiced. In collaboration with another investigator the author described in another paper a rapid bedside method for estimation of the serum chlorides in patients with the salt depletion syndrome.

Radiology, Syracuse, N. Y.

60:641-796 (May) 1953

Roentgenographic Appearance of Metastases to Central Lymph Nodes of Superior Mesenteric Artery in Carcinoma of Right Colon. J. J. McCort.—p. 641.
X-Ray Appearance and Incidence of Calcified Nodules on Habenular Commissure. C. G. Smith.—p. 647.
•Accidental Visualization of Ventricles Months After Intracranial Injection of Thorotrast. S. A. Leader.—p. 651.
Aseptic Necrosis of Bone in Sickle-Cell Disease. J. E. Moseley and J. B. Manly.—p. 656.
Radiological Study of Temporomandibular Joints. H. P. Doub and F. A. Henny.—p. 666.
Routine Clinical Experiences Using Urokon Sodium 70% in Intravenous Urography. A. A. Porporis, O. C. Zink, H. M. Wilson and others.—p. 675.
Preliminary Report on Teridax, New Cholecystographic Medium. R. Shapiro.—p. 687.
Contrast Substances for Angiocardiography: Study of Side Effects. C. T. Dotter, M. S. Wetchler and I. Steinberg.—p. 691.
Examination of Small Intestine with Carboxymethylcellulose. I. E. Kirsh and M. A. Spellberg.—p. 701.
"Punch-Card" Sorting for Radiological Reports. O. A. Steinnon.—p. 708.
Roentgen Visualization of Rokitansky-Aschoff Sinuses as Additional Sign of Chronic Gallbladder Disease: Case Report. R. Sukman and P. B. Daron.—p. 714.
Preoperative Radiographic Diagnosis of Foreign Body Within Gallbladder. W. R. Scott.—p. 718.
Gas-Containing Perinephric Abscess. A. H. Levy and H. N. Schwinger.—p. 720.
Experiences with Rapid Irradiation Technic in Oral Carcinoma. S. Rubenfeld.—p. 724.
Studies on Dosimetry and Bactericidal Effects of Gamma Radiations from Cobalt⁶⁰ Source. S. A. Goldblith, B. E. Proctor, S. Davison and others.—p. 732.

Accidental Visualization Months After Intracranial Injection of Thorotrast.—A case is described in which the lateral ventricles and the third ventricle were visualized about eight months after the injection of colloidal thoriumdioxide (Thorotrast) into a cerebral cavity not communicating with the ventricles. While the most likely explanation for the visualization is a deposit of the contrast medium, how this occurred is not evident. The cavity in the brain was distinctly lateral to the left lateral ventricle, as demonstrated by the pneumoencephalogram made nine days after the injection. At least at that time, there was no communication of the cavity with the ventricle. It appears possible, however, that an accidental penetration of the ventricle occurred when the serosanguinous fluid was aspirated from the region of the left temporal lobe. A possible explanation for the presence of the contrast medium in the ventricles after such a long period is that it had lost its colloidal properties from having been in a closed cavity (as indicated by the work of Freeman), and when it was then accidentally transferred to the ventricles it clung to the walls much more readily. It seems more plausible that it reached the ventricles directly rather than leaking out and eventually getting into the ventricles by way of the subarachnoid spaces. One other possibility was considered initially before the history of instillation of the contrast medium into the cavity in the brain was obtained, namely, calcification of the walls of the lateral and third ventricles. It seems likely that calcium is present at the site of the intracerebral hematoma, with possibly some of the contrast medium at this site also.

Rocky Mountain Medical Journal, Denver

50:373-446 (May) 1953

Whither Goest Thou? J. T. Finlen.—p. 395.
Precancerous Dermatoses. E. P. Cawley and C. E. Wheeler.—p. 399.
Pelvic Tuberculosis. O. J. Rojo.—p. 402.
Coarctation of Aorta. T. F. Keyes.—p. 406.
Non-Osteogenic Fibroma of Bone. W. C. Huyler and F. H. Hartshorn.—p. 409.
Mental Health Program for Wyoming. D. W. Herrold.—p. 410.

Surgery, Gynecology and Obstetrics, Chicago

96:637-762 (June) 1953

Emergency Surgical Treatment of Perforated Gastric and Duodenal Ulcers. O. H. Beahrs, D. K. Duncan and L. A. Vadheim.—p. 637.
•Detection of Chromosomal Sex in Hermaphrodites from Skin Biopsy. K. L. Moore, M. A. Graham and M. L. Barr.—p. 641.
•Incidence of Cancer with Nipple Discharge and Risk of Cancer in Presence of Papillary Disease of Breast. A. R. Kilgore, R. Fleming and M. M. Ramos.—p. 649.
Carcinoid Tumors: Clinical and Pathologic Study of 27 Cases. R. G. Mrazek Jr., M. C. Godwin and J. Mohardt.—p. 661.
Demonstration of Antidiuretic Substance in Urine of Postoperative Patients. T. N. Cline, J. W. Cole and W. D. Holden.—p. 674.
Acute Obstruction of Colon: Analysis of 205 Cases. W. F. Becker.—p. 677.
•Pancreatic Cysts: Principles of Treatment. H. Doubilet and J. H. Mulholland.—p. 683.
Sarcomas of Breast. O. F. Grimes, E. B. Fenston and H. G. Bell.—p. 693.
Delayed Primary Closure of Korean War Wounds. D. Fisher.—p. 696.
Outlet Pelvimetry and Symphysis-Biparietal and Sacral-Biparietal Diameters. L. G. Roth.—p. 704.
Use of Radioactive Colloidal Gold in Treatment of Serous Effusions of Neoplastic Origin. J. P. Storaasli, F. J. Bonte, D. P. King and H. L. Friedell.—p. 707.
Refrigeration in Experimental Surgery of the Aorta. E. J. Beattie Jr., D. Adovasio, J. M. Keshishian and B. Blades.—p. 711.
Effect of Experimentally Produced Pancreatitis on Canine External Pancreatic Secretion. G. A. Hallenbeck, G. L. Jordan Jr. and A. H. Kelly.—p. 714.
Effect of Intrathoracic Vagal Stimulation on Electrocardiographic Tracing in Man. D. R. Morton, K. P. Klassen, J. J. Jacoby and G. M. Curtis.—p. 724.
Surgical Treatment of Arthritic Hip. F. E. Stinchfield.—p. 733.
•Preservation of Living Bone in Plasma. E. J. Tucker.—p. 739.

The Detection of Chromosomal Sex in Hermaphrodites.—In humans, females have an XX chromosome combination while males have XY chromosomes as the sex chromosomes. Moore and associates point out that, according to the Klebs classification, there are true hermaphrodites and pseudohermaphrodites. The criterion of true hermaphroditism is the presence of ovarian and testicular tissue, either as an ovotestis or as a separate ovary and testis. Such cases are rare, about 50 histologically proved cases of true hermaphroditism having been recorded in the literature. Pseudohermaphrodites are classified as "male" or "female" according to whether the gonads are testes or ovaries. As in true hermaphrodites, pseudohermaphrodites show great variation in the genital structure, body form, breast development, growth of hair, and psychosexual manifestations. Pseudohermaphroditism appears to be commoner than is usually thought, the incidence being, according to Young, 1 in 1,000 of the population. The secondary sex characteristics in pseudohermaphrodites often run counter to the type of gonad. The authors stress the desirability of a more reliable identification of hermaphrodites. They have found that the nature of the sex chromosomes (XX or XY) may be detected by examining the epidermal nuclei in a small biopsy specimen of skin. They describe preliminary investigations on animals (cats) that led to the detection of chromosomal sex in man from skin biopsy specimens. A study of skin specimens from 50 women and 50 men of normal sex development demonstrated a difference in nuclear structure, according to sex, in cells of the malpighian layer. Nuclei of female specimens contain a mass of

sex chromatin, which is seldom seen in the nuclei of male specimens. The sex chromatin is believed to be derived from heterochromatic parts of the sex chromosomes. The XX chromosomes of the female produce a chromatin mass large enough to be identified, while the XY chromosomes of the male do not produce a chromatin mass large enough to be distinguished from the general particulate chromatin. This method of detecting the chromosomal sex has been used in two cases of hermaphroditism. One patient proved to be a chromosomal female and the other a chromosomal male. The extension of this study to other cases of intersexuality is urged in the hope of clarifying the complex problem of hermaphroditism. The potential importance of the skin biopsy technique lies in the possibility that it may prove to be a simple method of detecting the dominant sex in infancy in doubtful cases.

Relation of Nipple Discharge and Papillary Disease to Cancer.—Kilgore and associates discuss the relation of nipple discharge and cancer on the basis of their observations on 190 patients with nipple discharge and of reports in the literature. A secretory discharge that is either grossly milky or contains secretory elements microscopically is of little significance and requires no more than observation for change of character. A serous discharge without secretory elements will contain blood at some time in one-third or more of the cases. The significance of such a discharge is similar to that of one containing blood. When there is a bloody discharge without a palpable lump, the chance of cancer being present is about 1 in 20 to 1 in 25. For this reason alone the source of bleeding should be found and its nature determined. If cancer is not present, bleeding may arise from papillary disease. There is disagreement as to the relationship of papillary disease to cancer. The authors feel that papillary disease indicates a cancer risk greater than average. None of the methods of locating and removing a single lesion of papillary disease is uniformly successful. If such a lesion is found, the chance of leaving undiscovered lesions elsewhere in the breast is considerable. For these reasons the woman over 40 with a bloody discharge or papillary disease and younger women with multiple lesions should be subjected to mastectomy (extended to radical operation if cancer is discovered).

Treatment of Pancreatic Cysts.—The relation of pancreatitis to pancreatic cysts is well established. The concept that recurrent pancreatitis usually results from the retrojection of bile into the pancreatic duct has been supported by the experience of the authors of this report. This can occur only if the sphincter of Oddi is spastic and when the bile and pancreatic ducts join in a common ampulla above the papilla of Vater. The presence of this common passageway in the described cases of pancreatitis and the good results achieved by sphincterotomy support this concept. Patients with inflammatory cysts must have spasm of the sphincter of Oddi, which tends to perpetuate or increase the pancreatic cysts. Drainage of these cysts must continue for long periods, because the pancreatic intraductal pressure is higher than normal because of the sphincter spasm. For the same reason pancreatitis may recur even in the presence of a draining pancreatic fistula, as is illustrated in two of the cases described here, and in the literature. Drainage does not prevent recurrences of pancreatitis and formation of new cysts, as was observed in one of the reported cases. Sphincterotomy should not only be helpful in the treatment of pancreatic cyst but also, by removing the cause of pancreatitis, should prevent further attacks. Although cystogastrostomy and cystojejunostomy have given good results, it does not seem advisable to anastomose the gastrointestinal tract to a retroperitoneal space; the authors do not consider it necessary except in cysts of the head of the pancreas in which the wall, probably a dilated duct, is hard and rigid. Since acute pancreatitis with pathological changes can occur with few or no overt clinical symptoms, it is not surprising that pancreatic cysts are found without a history of gastrointestinal disease. Such cysts, unless they are of congenital origin or due to an adenomatous growth, must have been caused by pancreatitis. Traumatic injury of the pancreas may produce necrosis of pancreatic tissue and rupture of the ducts. Since the pathological process following such injury is similar to that following acute pancreatitis, any cyst that may result should be treated similarly. The authors arrive at the following conclusions: 1. Pseudocysts of the pancreas, of inflammatory origin, should be treated by drainage and by section of the sphincter of Oddi, since this will cure the cyst and prevent the recurrence of pancreatitis. 2. Persistent cutaneous pancreatic fistulas resulting from drainage of a pancreatic cyst should be treated by sphincterotomy. 3. Cysts of the head of the pancreas should be treated by cystojejunostomy and sphincterotomy.

Preservation of Living Bone in Plasma.—Tucker found that a bone of a dog could be kept in the serum of the host at a mean temperature of 5 C (40 F) for as long as 18 months and be transplanted into other dogs with success. Similar methods were used for human bone. The bone was obtained from fresh cadavers not longer than six hours post mortem or from amputated extremities. These bodies were free from apparent infection or malignant disease. The blood Wassermann reaction, blood group, and Rh factor were determined. The bone was removed with sterile technique and placed in a sterile container, which was then filled with human plasma; 3 gm. of sodium sulfathiazole and 1,000,000 units of soluble penicillin were added to each 1,000 cc. of plasma. The containers were kept at a mean temperature of 5 C (40 F). The plasma was cultured at intervals, but only one specimen was found contaminated with a fungus after 14 months of storage. Microscopic, chemical studies, and tissue cultures were made on bone preserved in this manner. It was found that the cellular elements of this bone remain intact for long periods. The osteocytes of the bone show histological evidence of viability for as long as 28 months. Chemical changes take place when bone is stored in homologous plasma that do not occur when bone is preserved in heterogenous plasma. This type of preserved bone has been used in 40 cases. In no instance was there a postoperative infection or nonunion of the graft. In one patient, who was operated on six weeks after grafting, the graft was firmly united to the bone. Roentgenologically these grafts are well united at six months. Large quantities of viable bone that possesses osteogenic properties can be preserved by this method.

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Western J. Surg., Obst. & Gynecology, Portland, Ore.

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*Intrathoracic Meningocele. J. M. Baker and G. M. Curtis.—p. 209.
Anemias of Intestinal Stagnation. D. H. Sprong Jr., W. F. Pollock and M. A. Mack.—p. 217.
Diagnostic Value of Percutaneous Retrograde Arteriography of Iliac Artery in Cases of Tubal Pregnancy. U. Borell, I. Fernstrom and A. Westman.—p. 223.
Plural Births in United States. J. B. Nichols.—p. 229.
Fatal Cerebral Abscess Caused by Pasteurella Multocida. B. Harris, L. Veazie and W. L. Lehman.—p. 237.
Hazards of External Version. C. C. Hall.—p. 239.
Problem of Prolapsed Umbilical Cords. D. R. Nelson and P. H. Arnot.—p. 262.
Prolonged Labor. C. L. Fearl.—p. 272.

Intrathoracic Meningocele.—Two cases of intrathoracic meningocele are described because of the extreme rarity of this lesion. One of these cases was diagnosed preoperatively, which is rarely done because the condition is commonly mistaken for a posterior mediastinal neurofibroma with an intraspinal hourglass extension. In both of the reported cases the meningocele was successfully removed with complete recovery. Including these two cases, a total of 15 proved intrathoracic meningoceles have been reported in the literature. Von Recklinghausen's disease or cutaneous neurofibromatosis was associated with this anomaly in 9 of the 15 cases, and there were associated spinal deformities in 13 of the 15 cases. Since 1948, a total of six meningoceles have been successfully removed without a death. The seventh patient operated on died of cardiac arrest. Previous to 1948, the mortality following surgical removal was 100%. The indications for the surgical removal of intrathoracic meningocele are progressive enlargement of the meningocele, compression of intrathoracic structures and progressive erosion of the associated spinal vertebrae.

FOREIGN

Acta Medica Scandinavica, Stockholm

145:155-236 (No. 3) 1953. **Partial Index**

Significance of Pulmonary Blood Volume in Regulation of Blood Circulation Under Normal and Pathological Conditions. T. Sjöstrand.—p. 155.
*Immunologic Agranulocytosis? (Case Report). K. B. Hansen.—p. 169.
Artificial Kidney: XXII. Dialytic Treatment in Four Selected Cases of Acute Glomerulonephritis; Contribution to Question of Need for Dialysis in Rational Renal Therapy. N. Alwall, A. Lunderquist and A. Tornberg.—p. 175.
Hypoprothrombinemia—Occurrence and Prognostic Significance in Congestive Heart Failure. C. J. Bjerkelund and E. Gleditsch.—p. 181.
Dihydrogenated Ergot Alkaloids (Hydergine) in Treatment of Essential Hypertension. P. Bechgaard and L. Paulsen.—p. 189.
Congenital Hemorrhagic Syndrome Due to Deficiency of Coagulation Factor Recently Isolated and Described Under Names of Factor 7, Covertine and S.P.C.A. (Hemorrhagiparous Congenital Hypoconvertinemia). J. L. Beaumont and J. Bernard.—p. 200.

Problem of Immunologic Agranulocytosis.—Severe agranulocytosis in the blood and bone marrow associated with a pronounced increase in the percentage of gamma globulins is reported in a 63-year-old woman. The cause could not be established with certainty, but drugs as the causative agents could be eliminated. Corticotropin in doses of 20 mg. was given every six hours together with salt-free diet and potassium, causing depression of gamma globulins well correlated to the clinical and the hematological cure. Some sodium retention necessitated discontinuation of corticotropin therapy for one day, resulting in a relapse with an increase in gamma globulins and a pronounced decrease in leukocytes. The author speculates that the "idiopathic" agranulocytosis in this patient represented a leukocytic "variant" of immunologic hemolytic anemia, and that the cause is in some abnormality of the antigen-antibody response of the body.

British Journal of Surgery, Bristol

40:409-520 (March) 1953. **Partial Index**

Angiomatous Conditions of Gastro-Intestinal Tract. J. A. Shepherd.—p. 409.
*Response of Prostatic Carcinoma to Oestrogen Treatment. J. D. Fergusson and L. M. Franks.—p. 422.
*Bilateral Carcinoma of Breast. A. J. M. Reese.—p. 428.
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Acute Phlegmonous Caecitis. R. E. B. Tagart.—p. 437.
Arteriography: Simple Technique. I. MacKenzie and H. A. R. Hamilton.—p. 442.
Method of Angiocardiography. I. M. Hill.—p. 444.
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Chronic Jejunal Prolapse Following Gastro-Enterostomy. J. E. Richardson.—p. 471.
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Carcinoma of Oesophagus with Histological Appearances Simulating a "Carcinosarcoma." R. Smith and N. F. C. Gowing.—p. 487.
Anomalous Peritoneal Encapsulation of Small Intestine: Report of Three Cases. P. H. T. Thorlakson, I. W. Monie and T. K. Thorlakson.—p. 490.
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Chronic Intussusception Due to Inversion of Meckel's Diverticulum Containing Chronic Peptic Ulcer, Heterotopic Tissues, and Lipoma. R. E. Gibbons and W. St. C. Symmers.—p. 500.
Plasma-Cell Mastitis. G. F. Cassie.—p. 505.
Internal Supravesical Hernia: Report of Case Presenting with Bladder Symptoms. D. R. Barnes and B. J. Dreyer—p. 508.

Estrogen Treatment of Prostatic Carcinoma.—Fergusson and Franks report studies on tissue obtained on two or more occasions from the same patient with prostatic cancer treated with estrogens (5 to 30 mg. of diethylstilbestrol or the equivalent daily) and followed for nine years. Tissue was obtained by repeated biopsies or by biopsy and subsequent postmortem examination. Biopsy material was removed by a suitable needle through the perineum, at periurethral resection, or at open operation. Occasionally it was possible to examine serial biopsy specimens from accessible metastatic lesions in lymph nodes or bone. In all 82 specimens from 33 patients were available for study. Paraffin sections stained with hematoxylin and eosin were examined by one of the authors, and in some cases sections were stained for elastic tissue (orcein), reticulin (Foot's method), or by a modification of Masson's trichrome method. It was found that clinical regression of primary prostatic carcinoma after estrogen therapy is associated with histological evidence of cell destruction in the prostate. In almost all cases the tumor cells, but not the normal tissue, eventually lose their sensitivity to the hormone. The reason for this is not known, but a relative loss due to inadequate dosage occurs in some cases. The resistant tumor cells have no specific histological characteristics but are often of the dark-cell type in solid trabeculae. Even in cases with a very marked histological response to estrogens there are always surviving tumor cells, so that it is unlikely that endocrine treatment alone can ever be expected to "cure" prostatic cancer. Grading is of little value in assessing the prognosis or response to treatment, as estrogen sensitivity of the tumor cells is independent of the degree of differentiation or anaplasia. The presence of metastases when the patient is first seen tends to reduce the survival period. Breast tissue changes associated with administration of estrogens is often associated with a good clinical response. The optimal dosage of estrogens may be higher than that generally used. The subjective response, the behavior of the primary growth and accessible metastases, and the development of breast swelling and other side-effects indicate that in many cases doses of from 5 to 10 mg. of diethylstilbestrol may be sufficient to produce an initial effect over a few days. In others, three to four weeks may elapse before any change is noted, and in some the condition appears entirely unresponsive. The use of other hormones, such as pituitary hormones, is being investigated in cases in which the prostatic tumor has become estrogen-resistant.

Bilateral Carcinoma of Breast.—Twenty of 504 patients with cancer of the breast who were treated at St. George's Hospital in London between 1938 and 1951 had bilateral growths, and in 15 of them there was clinical and histological evidence that both were distinct primary tumors. The remaining five were advanced cases in which the possibility of spread from one breast to the other could not be excluded. Despite the extreme rarity of multicentric cancer and the frequency with which bilateral tumors have been ascribed to metastasis, there is evidence that in the first 15 cases of the present series the second growth was a primary carcinoma, In seven of the cases the growths were morphologically very different, and in five other cases the second tumor was clearly seen arising from an intraductal carcinoma. In the remaining three cases, as in most of the others, there was clinical evidence that both tumors were primary. The author concludes that bilateral breast carcinoma is due oftener to two primary tumors than to dissemination of a single growth.

British Medical Journal, London

1:1123-1178 (May 23) 1953

Medicine and Social Policy. F. A. E. Crew.—p. 1123.
Treatment of Polycythaemia Rubra Vera. R. B. Scott.—p. 1128.
Observations on Prognosis in Hypertension. A. W. D. Leishman.—p. 1131.
*Pulmonary Emphysema Treated by Pneumoperitoneum. R. D. C. Brackenridge and A. T. Jones.—p. 1135.
Sensitivity Studies on Shigella Sonnei. G. B. Forbes.—p. 1139.
Contact Dermatitis Due to Aminoazotoluene. R. H. Mcara and I. Martin-Scott.—p. 1142.
Aplastic Anaemia Occurring Eight Years after T.N.T. Poisoning. F. G. J. Hayhoe.—p. 1143.
Haemophilia with Respiratory Obstruction. A. C. Macdonald, J. G. Robson and H. Wapshaw.—p. 1144.
Case of Talc Granuloma Simulating Carcinoma. F. Baar.—p. 1146.
Ishihara Tables: Comparison of 9th and 10th Editions. R. A. Weale—p. 1148.

Emphysema Treated by Pneumoperitoneum.—The essential pathological feature in emphysema is loss of elasticity in the lungs, which are very large but not truly distended. Expiration, largely a passive process produced by recoil of the elastic tissues of the lung, is impaired. The patient is unable to ventilate the lungs, and the oxygen saturation of the arterial blood falls to 85%. The inspired air tends to be drawn into the dead space formed by dilated and avascular alveoli. Chest expansion is often less than 1 in., and the increase of carbon dioxide in the blood produces dyspnea, often accompanied by

cough and bronchospasm. Myocardial failure may also occur. Nine patients with severe pulmonary emphysema were treated with pneumoperitoneum and encouraging symptomatic relief was obtained in six. The purpose of this treatment is to raise the intra-abdominal pressure sufficiently to cause elevation of the diaphragm during expiration without impeding its contraction during inspiration. The excursion of the diaphragm is increased, and pulmonary ventilation is improved. The amount of air required by each patient can soon be determined; in this series, 400 cc. were given initially and the volume was gradually increased until from 800 to 1,000 cc. could be given without discomfort. Thereafter refills were given at weekly or biweekly intervals. Minor degrees of ascites occurred, and in one case inguinal hernias were aggravated. A few patients complained of abdominal discomfort for the first 24 or 48 hours after a refill, usually because too much air had been given. Improvement was shown by the disappearance of dyspnea and an increase in the amount of exercise that could be taken. Two of the three patients who were not benefited had a history of congestive heart failure and the other had asthma. Bronchitis, to which emphysematous patients are particularly subject, temporarily nullifies the good effects of a pneumoperitoneum.

Canadian Medical Association Journal, Montreal

68:531-642 (June) 1953

Thyroid Disease in New Zealand. C. Hercus.—p. 531.
Human Botulism in Canada. C. E. Dolman.—p. 538.
New Approach to Infant Feeding. W. F. Gough.—p. 544.
Potency of Purified Extracts of Veratrum Viride Sold in Canada. M. G. Allmark and A. Lavallée.—p. 546.
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50 Cases of Resection for Pulmonary Tuberculosis. J. A. Gravel.—p. 552.
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ACTH in Treatment of Keratodermia Blenorrhagica. B. Shallard and B. Kanee.—p. 561.
Correlation of Eosinophil Count with Clinical Course During Cortisone and ACTH Therapy. J. R. Martin and C. J. Pattee.—p. 565.
Mysoline in Treatment of Epileptic and Non-Epileptic Psychiatric Patients. A. Bonkalo and R. G. S. Arthurs.—p. 570.
Classification of Varicose Veins with Plan of Treatment. A. F. Jones.—p. 575.
Psychiatric Services in General Hospitals in Canada. C. A. Roberts, A. F. Gough and W. A. Mennie.—p. 578.
Treatment of Ragweed Hay Fever. C. J. Malloy.—p. 583.
Management of Marie-Strumpell Spondylitis with Special Reference to Long-Term Cortisone Therapy. A. W. Bagnall, J. A. Traynor and H. W. McIntosh.—p. 587.

Die Medizinische, Stuttgart

No. 20:671-702 (May 16) 1953. **Partial Index**

Physician and Education. H. Spiess.—p. 671.
*Proteolysis in Gastric Anacidity. F. Bramstedt.—p. 675.
Possibilities and Limits of Segmental Therapy. H. Schoeler.—p. 678.
"Oscillographic Congestion Test," a New Method of Examination for Evaluation of Capacity of Vascular Reaction in the Extremities. S. Dortenmann.—p. 682.

Proteolysis in Gastric Anacidity.—In an attempt to explain the part played by gastric kathepsin in the satisfactory proteolysis frequently observed in patients with gastric anacidity, the patients were given 500 cc. of skimmed milk after the gastric juice had been aspirated by tube from the fasting stomach. After 15 to 20 minutes a moderate amount of chyme was removed, and its tryptophan, tyrosine, residual nitrogen, and total nitrogen contents were determined. Ten minutes after the administration of the usual alcohol or caffeine test potion, the peptic proteolysis at 1.8 pH and the katheptic proteolysis at 3.8 pH were determined with the aid of the nephelometric edestin method. The proteolytic activity of ferment preparations was ascertained by the biuret method determining photometrically the split peptide compounds according to the decreased extinction. Two types of patients with gastric anacidity could be distinguished; the first group consisted of patients whose gastric mucosa still functioned but with reduced secretion of pepsin and kathepsin, and group 2 of patients with long-standing anacidity and atrophic gastric mucosa in whom the production of gastric ferments had almost stopped. In patients of the second group considerable regurgitation of the duodenal juice as well as satisfactory proteolysis was usually observed. The katheptic component could not have been responsible for the proteolysis, since such secretion was absent. It is suggested that the regurgitated tryptic ferments are responsible for the satisfactory proteolysis; these ferments may be exclusively responsible in patients with atrophy of the mucosa, and combined with the katheptic ferments in patients with a reduced production of gastric ferments. Patients with gastric anacidity and disturbed proteolysis were given a therapeutic trial with 1 gm. of glutathione, resulting in further reduction of proteolysis almost to zero. This almost complete arrest of the proteolysis was considered to support the author's concept that in patients with gastric anacidity and atrophy of the gastric mucosa proteins are broken down by tryptic catalysis. Experiments with commercial pancreatic preparations whose activity was determined by the biuret method revealed a rapid increase of the proteolytic activity between pH values of 6 and 7, with results not much below the optimum in the neutral range. These findings suggest treatment with pancreatic ferments or trypsin preparations as the method of choice in patients with gastric anacidity and atrophy of the gastric mucosa.

Gazzetta Medica Italiana, Milan

112:97-124 (April) 1953. **Partial Index**

*Clinical Findings in Arteriosclerosis Treated with Extracts of Artery. L. Schiavetti and S. Lucà.—p. 97.
Considerations on Results of Streptomycin Combined with Chloramphenicol in Treatment of Some Diseases of Infancy. R. C. Pedrinazzi and G. Spinelli.—p. 102.
*Mephenesin (Tolseron) in Treatment of Hemiplegia. L. Rigoletti, G. Martini and G. Boaro.—p. 117.

Arterial Extract in Arteriosclerosis.—Telatuten, an organic preparation extracted from the wall of the arteries of young animals and containing the active substances of the three coats of the vessel, was used to treat 14 patients with arteriosclerosis. Six patients in whom the disease involved mainly the legs (claudicatio intermittens) received intravenously 1 cc. of the drug daily for 6 days or every other day for 15 days. There was a one week treatment-free period after the patient had received 6 cc. when the therapy was continued longer. Sometimes oral administration of four 0.5 gm. tablets of Telatuten daily followed for 10 to 20 days. The improvement of insomnia, headache, irritability, and mental confusion was pronounced in three patients and moderate in two, but the condition of one patient remained unchanged. There were no side-effects, and in a follow-up six months later the improvement was still present. Five patients with arteriosclerosis and arterial hypertension received the drug intravenously and intramuscularly (1 cc. daily) and then orally (four to six 0.5 gm. tablets daily). The systolic pressure and sometimes the diastolic pressure dropped in four patients, insomnia, headache, and memory disturbances disappeared in all five, and the electrocardiographic and ballistocardiographic findings were improved. The drug was given to three patients in whom arteriosclerosis was associated with angina pectoris. The patient in whom the angina was severest received the drug intramuscularly for six days, while glyceryl trinitrate had to be given concurrently. Then Telatuten was given intravenously in two 10 day courses. The anginal attacks became less frequent and less severe, administration of glyceryl trinitrate was no longer necessary, and the blood pressure dropped. The other two patients received Telatuten intravenously in three four-day courses, with a treatment-free interval of four days between each course. Their general condition was improved, and the precordial distress that usually followed the slightest exertion and preceded the anginal attacks was no longer present. The drug restored to normal the cholesterol values of patients with cholesteremia. Telatuten probably influences the arteriosclerotic picture by interfering with the cholesterol metabolism, which is one of the main pathogenetic factors of the disease.

Mephenesin in Hemiplegia.—Mephenesin (Tolseron) was used to treat four patients with spastic hemiplegia. Cerebral thrombosis had occurred in one of these patients 10 months earlier, and a cerebral hemorrhage in another 2 months earlier. The other two were hospitalized immediately after the attack, and

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the therapy was instituted 21 and 40 days later respectively. The initial dose of mephenesin was 1 gm. daily, but this was gradually increased every three to four days thereafter to the average effective daily dose of 3 gm. From 34 to 282 gm. of mephenesin were given to each patient over a period of from 22 to 88 days. No other drug was given concurrently. Passive mobilization of the paralyzed extremities, with psychological and physical reeducation for voluntary movements, was practiced. The patient who was treated earliest regained active mobility completely and two others improved satisfactorily. All three regained the voluntary movements of the muscles of the trunk and leg before those of the arm and hand. Results were limited in the patient to whom mephenesin was given many months after he had suffered the cerebral thrombosis. The good results obtained were still present in the patients two to eight months after discontinuation of the therapy. Mephenesin was also given to seven patients with flaccid hemiplegia, one of whom had had a thrombosis, one an embolism, and five a cerebral hemorrhage. The same daily doses of mephenesin were used as for the patients of the first group. A total dose of from 25 to 95 gm. of the drug was given over a period of from 18 to 40 days. Despite the complication of bronchopneumonia, one patient who received the drug 38 days after the attack regained 75% of the voluntary movements in 40 days; there was, however, contracture of some groups of muscles in the extremities. The paralysis regressed almost entirely in another patient in whom the therapy was instituted 30 days after the attack. Two of the patients, who were treated earlier, regained normal mobility in 20 and 25 days, respectively, although some muscle contractures appeared and were still present at the time of writing. All patients regained normal ambulation and good function of the arm. The good results were still present two to six months after the treatment was discontinued. The drug prevented the appearance of extensive muscle contractures and brought about in each patient as much functional restoration as could be expected considering the anatomic lesion present.

Lancet, London

1:1007-1056 (May 23) 1953

*Mitral Stenosis: Diagnosis and Treatment. A. Logan and R. Turner. —p. 1007.
Troublesome Tapeworms. R. Asher.—p. 1019.
Effect of A.C.T.H. and Cortisone on Vitamin-C Metabolism and on Weight and Composition of Liver: In Guineapigs and Other Species. L. J. Harris, M. N. Bland, R. E. Hughes and B. J. Constable.—p. 1021.
Mysoline in Treatment of Epilepsy. A. J. M. Butter.—p. 1024.
Perineal Testis. J. C. N. Wakeley.—p. 1025.
Positive-Pressure Hood and Split Front for Both Respirator. A. B. Christie and J. R. Esplen.—p. 1027.

1:1057-1108 (May 30) 1953

*Mitral Stenosis: Diagnosis and Treatment. A. Logan and R. Turner. —p. 1057.
Diabetes and Peripheral Arterial Disease: Clinical Study. R. Semple. —p. 1064.
Some Factors Affecting Uropepsinogen Excretion in Man. H. H. G. Eastcott, J. K. Fawcett and C. G. Rob.—p. 1068.
Treatment of Oxyuriasis with Diphenan. L. M. Dowsett and A. E. Brown. —p. 1070.
Observations on Three Cases of Acute Porphyria. J. E. Kench, F. R. Ferguson and G. S. Graveson.—p. 1072.
Peripheral Neuropathy Due to Isoniazid: Report of Two Cases. W. A. Jones and G. P. Jones.—p. 1073.
Nephrotoxic Effects of Drugs Used in Treatment of Petit Mal. J. G. Millichap and B. H. Kirman.—p. 1074.

Mitral Stenosis.—Of 200 patients subjected to thoracotomy for mitral valvular disease, 130 came from one medical unit. This paper is concerned with the first 100 of these 130, in whom valvulotomy was performed for mitral stenosis. Patients with mitral stenosis of all grades of severity were included, except those without symptoms and those with very large hearts and uncontrollable cardiac failure. In the absence of contraindications, surgery should be considered for every patient with mitral stenosis in whom symptoms are progressive. In distinguishing predominant stenosis from predominant incompetence, the qualities of the first heart sound and the opening snap are emphasized. Radiography is indispensable. Electrocardiography sometimes gives useful evidence. Cardiac catheterization may be valuable in difficult cases. Patients with the highest pulmonary arterial pressures tend to have a high pulmonary arteriolar resistance, advanced mitral stenosis, normal rhythm, right ventricular hypertrophy, recurrent hemoptysis, and breathless attacks but no pulmonary edema; they seldom have auricular fibrillation. A relatively low pulmonary arterial pressure may be due to severe myocardial damage. Auricular fibrillation, which existed in 40% of the patients, is a disadvantage but not a contraindication to operation; auricular fibrillation developed in 19% who had sinus rhythm before operation in the postoperative period. Sinus rhythm can be restored with quinidine. Pregnancy often aggravates mitral stenosis. Valvulotomy is sometimes an alternative to the termination of pregnancy; the results in three such cases are reported. The outstanding risk of the operation is embolism, but cardiotomy may permit evacuation of a clot from the left auricle and atrium without production of systemic embolism. Seven patients died as a result of the operation. The causes of death were embolism, ventricular fibrillation, transfusion reaction, cardiac arrest, probable hepatic failure, and probable intracardiac thrombosis. In 74 patients followed for more than three months, the results were good in 66, fair in 6, and poor in 2. In one of the patients with a poor result a second operation achieved better division of the commissure. In patients with intractable edema, ligation of the inferior vena cava may prove to be useful before valvulotomy is done. Valvulotomy is not curative, and changes in cusps, chordae, and cardiac muscle will persist.

Maandschrift voor Kindergeneeskunde, Leyden

21:109-144 (April) 1953. **Partial Index**

Extradural Hemorrhage in Child of Nine Months. H. W. Stenvers. —p. 109.
Hypocalcemia in the Newborn. C. Smeenk.—p. 122.
*Increased Lead Absorption Resulting from Pica in a Boy Aged 7, Combined with Gastric Achylia and Hypochromic Microcytic Anemia. C. J. van Wisselingh and C. de Kruijff.—p. 128.

Increased Lead Absorption Resulting from Pica.—A 7-year-old boy had severe hypochromic microcytic anemia, splenomegaly, and gastric achylia. For three years the boy had repeatedly eaten lead paint. Signs of malnutrition had existed for a long time. Despite the pica (eating of lead) the boy showed no symptoms of lead poisoning. In this connection, the authors stress the difference between increased lead absorption and lead poisoning. The latter is usually characterized by encephalopathy, neuritis, paralysis, and intestinal colics. None of these symptoms were present in the boy. His severe anemia might have been caused by the lead intake or by deficient nutrition. It is unlikely that the achlorhydria was the only cause of his hypochromic anemia. Possibly intestinal disturbances were partially responsible. Psychic factors may also have played a part, and these in turn may have caused anorexia, with the result of deficient food intake, so that a vicious circle was created. It is difficult to say which factor was primary. Achlorhydria combined with hyperchromic anemia occurs oftenest in women. Women with chlorosis frequently have pica.

Medical Journal of Australia, Sydney

1:573-608 (April 25) 1953

Murray Valley Encephalitis: Survey of Avian Sera, 1951-1952. S. G. Anderson.—p. 573.
Mortality in Australia from Typhus, Typhoid Fever and Infections of Bowel. H. O. Lancaster.—p. 576.
*Effects of Shoes on Foot Form: An Anatomical Experiment. F. W. Knowles.—p. 579.
Mental Symptoms in Poisoning with Atropine and Its Derivatives. I. A Listwan and N. G. Wheatley.—p. 581.
Relationship Between Human Infection with Brucellosis and Heavily Infected Milk Supply. K. H. Clapp.—p. 583.
Coronary Artery Disease in Western Australia, 1937 to 1950. W. S. Davidson.—p. 584.

Effects of Shoes on Foot Form.—Knowles shows that the measurement of feet, training of shoe fitters, and use of x-ray equipment cannot compensate for the gross discrepancy between the triangular outline of the plantar aspect of the natural

foot and the unrelated, pointed, tapering, or rounded outlines of modern shoes. The experiment described was based on the assumption that modern shoes distort the feet, and was designed to ascertain the reversibility of such distortion. Shoes of a suitable size were not made "to measure" or "to fit" in the conventional sense but rather to the shape and proportions that would fully accommodate natural feet. Special lasts had to be constructed, which were given a triangular plantar aspect. They were of suitable length and of average shape and width. Several pairs of shoes were made on these lasts and have been worn for three and a half years to the exclusion of all other shoes. X-ray photographs of the feet were taken on the day of the permanent change-over in August, 1948. By checking the external appearance of the feet against a photograph taken at the time of the change-over, it was noticed that no remarkable change occurred for many months. The wearer of these shoes was 37 years old, and rapid skeletal changes were therefore hardly to be expected. By November, 1950, however, some change was noted, and an x-ray picture taken then showed that the toes had become less cramped. The experiment was concluded with final x-ray films taken in April, 1952. The valgus tendency of the hallux of the right foot was corrected. The left hallux, though it had less valgus tendency originally, has not improved so much; the osteoarthritic changes in its metacarpophalangeal joint already shown in the earlier x-ray films are unaltered. Spread of the smaller toes has improved only to a slight extent. Excessive perspiration ceased immediately in the new shoes, the epidermophytosis eventually cleared spontaneously, and the onychocryptosis, though still present to a degree, ceased to be troublesome.

Medicina, Buenos Aires

13:73-138 (April) 1953. **Partial Index**

Action of Indole and Some Indole Derivatives on Muscular Contractility. A. O. M. Stoppani and J. A. Izquierdo.—p. 73.
*Eosinophils and Lymphocytes in Arterial Hypertension. A. C. Taquini, S. A. Plesch, T. A. Capris and B. N. Badano.—p. 91.
Effects of C 7337 (Regitine) on Patients with Arterial Hypertension. T. A. Capris and S. A. Plesch.—p. 109.
*Precocious Sexual Development in Infant Three Months Old Due to Tumor of Third Ventricle. L. F. Diez, J. J. Staffieri and J. E. Celoria.—p. 116.

Eosinophils and Lymphocytes in Arterial Hypertension.—The absolute amount and differential count of circulating eosinophils and lymphocytes were determined in 35 patients with essential hypertension, and the eosinophil response to epinephrine and corticotropin (ACTH) was observed. The epinephrine test was also carried out in 16 dogs, who either had experimental nephrogenic hypertension of more than six months' duration or were normal. The patients were considered in two different groups. The 19 patients of the first group had essential hypertension of either grade 3 or 4. All had hypertensive cardiopathy without cardiac insufficiency. The renal function was impaired in four patients. The 16 patients in the second group had essential hypertension of either grade 1 or grade 2 without cardiac or renal insufficiency. The results were as follows: The level of circulating eosinophils was low but within normal limits in all patients in both groups. The number of the circulating lymphocytes was also low but within normal limits. They were lower in the patients of the first group than in those of the second group. The circulating eosinophils decreased following the epinephrine test more than 50% in all of the patients in both groups. The response to corticotropin was normal in the three patients with hypertension of grade 3 or 4. Epinephrine eosinopenia was much more marked and of longer duration in dogs with nephrogenic hypertension than in the controls. The authors believe that in patients with essential hypertension the secretion of corticoids, the response of the hypophysis to the stimulation of epinephrine and corticotropin, and the response of the cortex to the hypophysial stimulation are normal. The acute eosinopenia observed in dogs with nephrogenic hypertension shows that in this experimental condition the adrenal glands undergo pathological changes that result in increasing the sensitivity of the hypophysioadrenal system to epinephrine.

Precocious Sexual Development Owing to Ventricular Tumor. The subject of this report was an infant, 3 months old, who had two attacks of convulsions within a month. The patient showed signs of increased intracranial pressure and marked muscular hypotonia. The head was enlarged, and the infant was unable to hold it in normal position when taken in the arms. The testicles were as large as those of a 3-year-old child. The coexistence of the neurological and endocrine syndromes and the isosexual type of precocious sexual development suggested a tumor in the third ventricle as cause of the syndrome. The diagnosis was confirmed by encephalography and ventriculography. The operation consisted in removing a small tumor from the wall of the third ventricle. The tumor on histological examination proved to be an astrocytoma. The neurological and endocrine symptoms regressed after the operation. The patient was well three years after the operation.

Minerva Medica, Turin

44:1137-1168 (May 2) 1953

Genetics of Microcythemia: Synthesis of Previous Studies and New Contributions. E. Silvestroni, I. Bianco and M. Siniscalco.—p. 1137.
Late Results of Surgical Interventions for Postoperative Peptic Ulcer: Clinical Contribution of 65 Cases. A. Ruffo and V. De Pace.—p. 1145.
Studies of Hemagglutinative Properties of Extracts of Fava Bean: Demonstration of Transportation of Agglutinative Principle From Erythrocyte to Erythrocyte. U. Carcassi.—p. 1152.
*Importance of Study of Blood Coagulation in Patients with Cardiac and Vascular Diseases. F. Weis.—p. 1153.

Blood Coagulation in Patients with Cardiovascular Diseases.—Blood coagulation was studied in patients with cardiovascular disease with the Waugh and Ruddick in vitro heparin tolerance test. There was hypercoagulability in four of five patients with venous or arterial thrombosis, and it was more pronounced in the three patients with venous thrombosis. Marked hypercoagulability was also revealed in one of three patients with myocardial infarction in whom the test was performed 15 days after the onset of the symptoms. Normal values were found in the other two, in whom the test was performed 19 and 32 days, respectively, after the symptoms had appeared. There was hypercoagulability in one patient with coronaritis associated with angina pectoris. The test was also performed in 18 patients with cardiac insufficiency who were receiving digitalis. The results indicated normal coagulability in six patients regardless of the type of insufficiency, hypocoagulability in six patients with right-sided cardiac insufficiency and one with left-sided insufficiency, and hypercoagulability in five patients. Hypercoagulability was attributed to chronic cor pulmonale in one patient and administration of a mercurial diuretic in another. In the other three the cause of the hypercoagulability was not clear, unless it could have been ascribed to a thrombotic process that had formed in some area that could not be explored clinically. The author performed the test on eight patients with diseases that do not affect blood coagulation (pneumonia, pulmonary abscess, and nephritis) who were receiving penicillin. The heparin tolerance curve indicated hypercoagulability in all of them, revealing the effect of the antibiotic on the blood coagulation. This test generally reveals hypercoagulability in patients with arteriosclerosis. The in vitro heparin tolerance test should always be made on patients with cardiac and vascular diseases before any anticoagulant therapy is instituted.

Presse Médicale, Paris

61:681-700 (May 13) 1953

*Importance of Recent Lesion Factor in Effects of Isoniazid Treatment of Pulmonary Tuberculosis. E. Bernard, B. Kreis and A. Lotte.—p. 681.
Syphilis and Pregnancy. L. Digonnet, L. Bigey and H. Payenneville.—p. 682.
*Treatment of Cerebral Stroke of Vascular Origin. P. Cossa.—p. 684.
Sodium Cyanide and Hypothalamo-Pituitary-Adrenal Axis. H. Van Cauwenberge, J. Closon, M. Vliers and J. Goblet.—p. 685.
*A New Antibiotic: Erythromycin. B. Mathieu de Fossey.—p. 687.

"Recent Lesion" Factor in Isoniazid Treatment of Pulmonary Tuberculosis.—The effect of isoniazid on pulmonary tuberculosis was studied in 414 adult patients, 215 of whom had had the disease for more than six months (group 1). The

other 199 patients (group 2) had either had it for less than six months so far as could be determined, or had recurrences superimposed on former lesions. The importance of early treatment was shown by the differences between the results obtained in the two groups. Reduction of fever and a gain in weight are easily discernible, and in these respects the differences between the two groups were moderate. The temperature was reduced in approximately 10% more of the patients in group 2, and was restored to normal in from 15 to 25% more, while weight gains were recorded in approximately 15% more of the patients in group 2. Much greater differences were revealed when the results of bacteriological and x-ray studies were compared; thus negative cultures were obtained at the end of three months in 73% of the patients in group 2 and in only 35% of those in group 1. Significant improvement in the radiological picture was seen in two-thirds more of the patients in group 2 than of those in group 1. Prolongation of isoniazid treatment for more than three months often produces continued improvement and may result in cure; sometimes, however, the action of the antibiotic must be supplemented by pneumothorax or some other form of surgical treatment. The use of streptomycin or *p*-aminosalicylic acid in combination with isoniazid lessens the danger that drug resistance will develop as a result of prolonged treatment. New cases of pulmonary tuberculosis should be treated as emergencies; delay in instituting treatment may lead to a chronic illness resistant to therapy.

Cerebrovascular Stroke.—Treatment of cerebral stroke of vascular origin should be designed to prevent or reduce edema, which, apart from massive hemorrhage, is the principal cause of death in this condition. All patients should be treated with continuous intravenous infusion of isotonic sodium chloride solution with glucose, 500 cc. in 8 hours, to which 40 cc. of 1% procaine (Scurocaine) hydrochloride without epinephrine and 1 ampul of Phenergan (10-[2-dimethylamino-1-propyl] phenothiozine) have been added. The isotonic sodium chloride solution with glucose should be replaced by 250 cc. of hypertonic 30% sodium chloride solution with glucose for patients with renal disease, and diabetics should be given isotonic sodium chloride solution without glucose. A substance capable of correcting cellular fragility, as for instance 5 cc. of 2.5% soluble rutin, may also be added. This basic treatment should be supplemented by heparin and stellate infiltration if softening is unquestionably present, or thrombase if hemorrhage is known to have occurred. Powerful ganglion blocking agents may prove helpful in severe cases in which the condition progresses without remission; if no improvement occurs, surgical intervention may be tried. Surgical removal of intracerebral hematomas will be successful in two out of three young patients and in one out of three older ones. Careful nursing and specific etiological treatment, such as insulin for diabetic patients, must not be neglected.

Erythromycin.—Erythromycin is a nontoxic antibiotic that is very effective against many bacteria, especially gram-positive organisms such as the pneumococci, the staphylococci, and various hemolytic and nonhemolytic streptococci. The fact that erythromycin must be given orally, because it is not readily soluble in water, makes its administration convenient and easy. It is perfectly tolerated in therapeutic doses and no complications affecting the kidneys, ears, liver, or blood as a result of its use have yet been reported. Mild digestive disturbances sometimes occur, but then disappear when administration of the drug is suspended. Contact with gastric juice reduces the activity of erythromycin, which is strongly alkaline, and its absorption is delayed and reduced when there is food in the stomach. The average initial dose is 1.5 to 2 gm. every 24 hours, given in four doses at six hour intervals, as far removed from mealtimes as possible. Smaller doses may later be used for maintenance. Erythromycin has been used effectively in diseases of the lungs, endocarditis caused by Streptococcus viridans, benign lymphogranulomatosis, and various other infections. It occupies a place between the broad spectrum antibiotics, such as aureomycin and oxytetracycline (Terramycin), and penicillin, and is especially valuable as a substitute for penicillin in cases of penicillin resistance.

Schweizerische medizinische Wochenschrift, Basel

83:419-438 (May 2) 1953. **Partial Index**

Hemodynamic Conditions During Cerebral Hemorrhage. R. Friede. —p. 424.

Colorimetric Determination of Amino Aciduria. I. Antener.—p. 425.

Favorable Results Obtained with Hydralazine Hydrochloride (Apresoline) in Arterial Circulatory Disturbances. A. Schmid.—p. 429.

*The Treatment of Roentgen Intoxication with Dihydroergotamine. K. Werner.—p. 431.

Dihydroergotamine in Treatment of Intoxication Resulting from Irradiation.—Roentgen intoxication is particularly severe when the sympathetic nerve is irradiated. It results from the action of roentgen rays on the neuroglandular system, from the resulting changes in the vegetative processes, and from tissue changes that in turn affect the sympathetic system. Werner found the various suggested remedies inadequate, including vitamins, circulatory remedies, belladonna, and liver preparations. He warns against the use of vitamin B_{12}, because its growth-promoting character may prove deleterious in tumor patients. In his search for a more effective remedy for roentgen intoxication, he decided to try dihydroergotamine, which was available in a drop solution for oral administration and in ampuls for injection. He usually prescribed 10 or 20 drops three times daily. Symptoms of roentgen intoxication appeared in 298 of 1,515 patients subjected to roentgen therapy, that is, in less than one-fifth. In view of this relatively low incidence, it is considered inadvisable to institute general prophylaxis against roentgen intoxication. Therapy was begun only if symptoms of roentgen intoxication appeared. The author compares the results of treatment with dihydroergotamine with the results of use of sedatives, vitamin B complex and belladonna. Dihydroergotamine is definitely superior to other agents. Dihydroergotamine not only proved the most efficient remedy for roentgen intoxication but also improved tolerance for nitrogen mustard therapy.

Ztschr. f. Hygiene & Infektionskrankh., Heidelberg

136:429-548 (No. 5) 1953. **Partial Index**

Streptomycin-Resistant Variants of Meningococci. W. Goeters.—p. 456.

*Cultural Isolation of Tubercle Bacilli After Pretreatment with Sulfuric Acid. W. Weigand.—p. 471.

Hetero-Hemagglutination: Clinical Significance. J. Nogalski and H. Lippelt.—p. 476.

Behavior of Cold Agglutinins in Active Immunization. G. Wildführ. —p. 501.

Investigations on So-Called "Large Bodies" in Green Streptococci. W. Bommer.—p. 510.

Isolation of Tubercle Bacilli After Pretreatment with Sulfuric Acid.—Because of the slow growth of tubercle bacilli, destruction of the accompanying bacteria is of vital importance if tubercle bacilli are to be obtained in pure culture. Weigand cites reports in the literature indicating that different concentrations of sulfuric acid have been used chiefly for this purpose, but there is no agreement on the concentration of the sulfuric acid nor on the length of exposure. To obtain more definite information about this, studies were made with various concentrations of sulfuric acid at the Hygiene Institute, on the sputum of 60 patients with established pulmonary tuberculosis. It was found that in tubercle bacilli cultures the accompanying bacteria can be destroyed by preliminary treatment with a 6% concentration of sulfuric acid. The specimen is treated with this concentration for 20 minutes, during which the mixture is shaken several times. Then it is centrifuged for 10 minutes at 2,500 to 3,000 rpm. Treatment with higher concentrations of sulfuric acid proved unnecessary; in fact, the yield improved by 37% when a 6% instead of a 10% concentration of sulfuric acid was used. Furthermore, particularly in the study of sputums and specimens of urine, growth was accelerated on the average by from 7 to 14 days. A greater incidence of positive results in urine and gastric juice specimens was obtained with the 6% concentration of sulfuric acid.

BOOK REVIEWS

Immunity: Hypersensitivity, Serology. By Sidney Raffel, Sc.D., M.D., Professor of Bacteriology, Department of Bacteriology and Experimental Pathology, Stanford University School of Medicine, Stanford University, California. Cloth. $8. Pp. 531, with illustrations. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1953.

One area in which the medical student does not get adequate training is the field of immunity and sensitivity reactions; because of this the average physician is not sufficiently familiar with immunity mechanisms and the relationships of these and of sensitization reactions to the development of disease. Probably one of the reasons for this is the lack of an adequate textbook. Most of the books on immunology and allergy do not adequately cover the field, although there are exceptions. This book gives a complete coverage of immunity processes in general. The author, who is a well-known investigator in the field, has condensed a large amount of information into a work of reasonable size.

The book has four general sections, the first of which deals with the fundamental aspects of immunity. The second takes up hypersensitivity (allergic) mechanisms. The third deals with the mechanisms of resistance in specific infectious diseases including pneumococcal disease, anthrax, plague, cholera, bacillary dysentery, tuberculosis, botulism, diphtheria, gas gangrene, smallpox, poliomyelitis, and influenza. The final section concerns various other aspects of hypersensitivity, with detailed discussion of various types of tissue and blood antigens. The book should be of value to the student and to the practitioner, as it will provide a solid foundation in immunologic principles. It may possibly be of greater value to the student, inasmuch as the emphasis is on immunology rather than hypersensitivity and its relationship to the pathogenesis of disease. This is probably only natural, as the author is not a clinician, and, possibly more important, unequivocal knowledge of the relationship of hypersensitivity to disease does not, by and large, exist.

There are a few statements or views that might be challenged, but in no case are these very serious. On page 45 the author speaks of "one chemically homogeneous antigen." It is very doubtful that anyone has ever had a chemically homogeneous antigen, if by this is meant a single molecular species, and indeed the author, in subsequent statements, indicates the improbability of such a substance. On page 223 he states, "Atopic antibody will not transfer itself to smooth muscle strips as will antibody resulting from ordinary antigenic stimuli, and the uterine muscle of a patient with atopic sensitivity shows no tendency to contract when exposed to antigen in the Schultz-Dale bath." This is a controversial statement. Schild and his colleagues have shown contraction of human tracheal muscle in atopic persons when exposed to the antigen in vitro. On page 247, in speaking of delayed and immediate types of hypersensitivity, the author states, "On the other hand, one or the other form of hypersensitivity may be present exclusively." It is doubtful that one can have delayed hypersensitivity without the concomitant presence of the immediate type, although admittedly it may be difficult to show the presence of the immediate type, which may not be involved in the development of symptomatology. On page 266 the author states, "Contact sensitization to domestic animals, for example, is found to be directed toward substances extractable by organic solvents from the dander and hair rather than to the proteins from these sources." While this is probably generally true, it certainly is not absolutely true, inasmuch as Rostenberg has reported on a woman who had intense vesicular eczematous reactions from defatted hair. The book as a whole appears to have few typographic errors. This work is an excellent introduction to the study of immune and hypersensitive mechanisms.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Textbook of Preventive Medicine. By Hugh Rodman Leavell, M.D., Dr. P. H., Professor of Public Health Practice, Harvard School of Public Health, Boston, and E. Gurney Clark, M.D., Dr. P. H., Professor of Epidemiology, School of Public Health of Faculty of Medicine, Columbia University, New York. With collaboration of George F. Badger, et al. Cloth. $8. Pp. 629, with 26 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18; 95 Farringdon St., London, E.C.4, 1953.

In the practice of preventive medicine the physician is a "clinical epidemiologist," who goes beyond the patient "and concerns himself with the circumstances under which human disease is likely to develop." In his attempt to prevent disease and its ill effects he attacks the problem on five levels: "(a) Health promotion; (b) Specific protection; (c) Early recognition and prompt treatment; (d) Disability limitation; (e) Rehabilitation." Such are the basic concepts of this work on preventive medicine. Announced as "an epidemiologic approach to preventive medicine" this is a book for the practitioner, not the health officer. The physician is portrayed as the health officer of the family, responsible for analysis and correction of the physical, social, and emotional forces underlying the development of disease. At the same time the physician and patient are portrayed as part of the community, with obligations toward society as well as each other.

The volume is more philosophical than the usual textbook of preventive medicine, possibly too philosophical for the average medical student. So much attention is given to general principles and the development of "a point of view, a philosophy, and a method of approach" that there has been sacrifice of much of the detailed factual knowledge on which the philosophy is based. The volume is best suited for the practicing physician or the student near the end of medical school. Though the book is the work of 21 collaborators, it has far less of the appearance of disconnected essays than is usually found in books of this type. The senior authors have achieved a high standard of coordination and unity and have produced a work that cannot fail to open new vistas in the practice of preventive medicine.

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Grundzüge der pathologischen Physiologie. Von Helmut Vogt, Professor für innere Medizin an der Universität Kiel. Cloth. 45.60 marks. Pp. 582, with 180 illustrations. Urban & Schwarzenberg, Thierschstrasse 11, Munich 22; Meinekestr. 13, Berlin W. 15, 1953.

The major divisions of this book deal with circulation (heart and vessels), blood, respiration, nutrition, digestion, the liver, metabolism, the kidneys, enzymes and vitamins, hormones, allergies, and the nervous system. The informal style reflects the author's pleasure in teaching, and the amount of space devoted to the parts of the nervous system and their integrative action is commendable. A limited list of abbreviations, which can be frustrating to foreign readers but space-saving to the author, is included. The bibliography and index are adequate, and the illustrations are clear and informative. The book can be recommended as a comprehensive, accurate, and up-to-date summary of an important subject.

Essentials of Physiological Chemistry. By Arthur K. Anderson, Professor of Physiological Chemistry, Pennsylvania State College, State College, Pa. Fourth edition. Cloth. $5. Pp. 480, with 42 illustrations. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1953.

This textbook for students with limited backgrounds in chemistry and biology, e. g., premedical students, includes a large amount of material on the chemistry of biological compounds. It is written for use with a laboratory manual. This edition includes new material on adrenal hormones, animal protein factor, antivitamins, antioxidants, carbohydrate metabolism, enzymes, folic acid, isotopes, photosynthesis, structure of starch and cellulose, and vitamin B_{12}. The book is well written, indexed, and printed.

Radiations and Living Cells: An Introduction to Radiation Biology, in Which the Action of Penetrating Radiations on the Living Cell is Described, with Special Reference to the Effect on Cell Division in Human Tissues. By F. G. Spear, M.D., M.A., D.M.R.E. Cloth. $3.50. Pp. 222, with illustrations. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, 1953.

The author, a member of the Scientific Staff Medical Research Council, Strangeways Research Laboratory, Cambridge, England, attempts in this short monograph to bridge the gap between medical physics and radiation biology. This volume can be used by specialists and yet is elementary enough to be of value to the general scientific reader. The subject matter is based on the author's lectures, which are delivered to medical candidates in radiology. The history of radiation biology is discussed in the first chapter. Chapter 2 is a short review of general cytology. The scope of radiation biology is discussed in chapter 3, and the types of biological response to the action of penetrating rays are covered in chapter 4. The next three chapters deal specifically with irradiation of the skin and the alimentary canal, of the blood and circulatory system, and of the generative system. Chapter 8 deals with whole body irradiation and the use of atomic energy as a source of penetrating radiation. Chapter 9 discusses the application of radiology in cancer. The last chapter is devoted to theories concerning the actions of penetrating rays on living cells. The book contains 60 illustrations. The bibliography is arranged by chapters and includes only books of interest to the general scientific reader; those with strictly medical titles have been omitted. The effective style, which seems to simplify even the most difficult points in radiation biology, makes this book worth while for anyone who wishes to be informed on the subject.

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Local Analgesia: Abdominal Surgery. By R. R. Macintosh, M.A. D.M., M.D., Nuffield Professor of Anæsthetics, University of Oxford, Oxford, England, and R. Bryce-Smith, M.A., B.M., B.Ch., First Assistant, Nuffield Department of Anæsthetics, University of Oxford. Cloth. $5. Pp. 94, with 88 illustrations by Miss M. McLarty. [Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2]; E. & S. Livingstone, Ltd., 16 & 17 Teviot Place, Edinburgh 1, 1953.

This small book illustrates how effectively attention can be drawn to a particular technique used in anesthesiology. The authors' apparent apology for the book is given in the preface: "If the reader does not share our view he will perhaps think it appropriate that this book should come from Oxford, the proverbial home of lost causes." This book is timely, for with the use of thiopental (Pentothal) sodium and curare local anesthesia is being abandoned when it would greatly increase the value of these agents. In addition to giving sound advice with regard to drugs, dosage, and concentration, the work covers briefly almost all the other pertinent information on the subject. Many illustrations are used, which allow condensation of the text. This is the best contribution that Oxford has made to the literature on anesthesia and it should be read carefully by all who are interested in anesthesia and in surgery.

Physical Examination on the Surgical Patient. By J. Englebert Dunphy, M.D., F.A.C.S., Associate Clinical Professor of Surgery, Harvard Medical School, Boston, and Thomas W. Botsford, M.D., F.A.C.S., Clinical Associate in Surgery, Harvard Medical School. Cloth. $7.50. Pp. 326, with 188 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5, 7 Grape St., Shaftesbury Ave., London, W.C.2, 1953.

These authors have, as Francis D. Moore says in the foreword, "emphasized not only the detailed techniques of examination, but also the approach to the patient as an individual. It is in this wise that the student gradually develops that clinical acumen which later on will tell him so much about the patient, his disease, his educational and social status, his fears, his anxieties, and his adjustment to the medical environment in which he finds himself. It is this clinical sense which will lead the young doctor to think of his patient as a man away from home, not a hospital case."

This is not a book of surgical technique, but it does discuss adequately many techniques in surgery. Physical signs are interpreted in relation to the pathology and disordered physiology of the disease. The primary purpose of this volume is "to focus attention on methods of importance of eliciting physical signs in surgical conditions." It fills a real need in student teaching, for it is intended to provide the student with knowledge that will make him more competent in diagnosis of surgical disorders. There are many excellent illustrations. The subject matter is clearly presented, and the index is complete. This is a magnificent and useful volume.

Trichloroethylene Anæsthesia. By Gordon Ostlere, M.A., M.B., B.Chir., Deputy First Assistant, Nuffield Department of Anæsthetics, University of Oxford, Oxford, England. Cloth. $2.25. Pp. 83, with 5 illustrations. [Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2]; E. & S. Livingstone, Ltd., 16 & 17 Teviot Place, Edinburgh 1, 1953.

This small book on trichloroethylene contains five chapters dealing with history, general characteristics, pharmacology, anaesthesia, and analgesia and concludes with a brief summary and an adequate index. Each chapter is followed by an extensive list of references, which are the most valuable part of the book. Complications associated with the use of this drug are adequately presented. The format of the book is excellent. Any physician interested in trichloroethylene will find this brief, compact volume valuable for reference.

General Physiology. By Bradley T. Scheer, Associate Professor of Biology, University of Oregon, Eugene. Cloth. $7. Pp. 613, with 110 illustrations. John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1953.

General physiology is necessarily an abstract subject, and the author of this book notes in a frank and interesting preface that this analysis of physiological phenomena in terms of fundamental concepts is to supplement physiological knowledge obtained in the laboratory. The five parts of the book are devoted to physicochemical foundations, chemical dynamics of life, energy transformations in cells and organisms (including bioelectricity, muscular movement, and radiations), the development of organisms, and integrative processes (especially nervous and humoral transmission).

The text is accurate, clear, and smoothly written. The smoothness is achieved in part by efficient handling of the 1,453 bibliographic references. These are in alphabetical order at the end of the book and are represented in the text only by small superscript numbers. Elimination of names and dates permits concentration on scientific ideas and will be appreciated by readers to whom the old familiar formula "In 1898 Bayliss showed that . . ." has become wearisome and distracting. The author has also put some of the necessary new abbreviations, like ATP (adenosine triphosphate) and RNA (ribonucleic acid), in the index. This book presents, in a scholarly manner, a wealth of carefully documented facts, and it deserves a place in every library of physiology.

Künstliche radioaktive Isotope in Physiologie, Diagnostik und Therapie. Bearbeitet von J. D. Abbatt et al. Redigiert von H. Schwiegk. Cloth. 136 marks. Pp. 842, with 294 illustrations. Springer-Verlag. Reichpietschufer 20, (1) Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, 1953.

The first part of this excellent book gives a minute and comprehensive account of the physical, chemical, and biological facts underlying the rest of the work; this includes methods of measurement, treatment of biological materials, problems of dosimetry, and general biological effects. The second part, use of radioactive isotopes as tracers in physiology, pharmacology, and diagnosis, discusses individual chemical elements and applications to special problems in oncology, circulation, and endocrinology. The third part concerns therapy and covers local (including intracavitary) methods of administration, treatment of tumors, blood dyscrasias, and diseases of the thyroid.

There are some American and British contributors along with the German. Owing to the care of the authors, editor, and publisher, there is excellent integration of content and style, and there are no obvious errors in either the German or the English portions of the text. The book is authoritative and richly illustrated, and there is a good subject index. The alphabetized bibliographic references at the end of each chapter form an author index. This book is valuable to anyone who uses radioactive isotopes in the laboratory or in the clinic.

QUERIES AND MINOR NOTES

GAMMA GLOBULIN

To the Editor:—*I have read the plans for allocation of gamma globulin during the coming months and note that supplies are allocated for measles and infectious hepatitis. I would like to raise the question of further allocation for mumps in adult males and for prophylaxis of german measles (rubella) in early pregnancy. Although the efficacy of gamma globulin in these conditions is not well established, it should be available to the physician who wishes to use it, because of the well-known complications of these two diseases.*

Milton R. Aisenson, M.D., Kew Gardens Hills, N. Y.

Answer.—Evidence in support of the proposal to allocate gamma globulin for the prophylaxis of German measles in pregnant women exposed to the disease is suggestive but inconclusive; in the case of mumps, it is nonexistent. A study of 262 children in a closed institution experiencing an epidemic of rubella was reported by the Subcommittee on Gamma Globulin of the Medical Society of the County of New York (*New York Med.* **5**:21 [Dec. 5] 1949). One hundred and thirty-three were injected with 6 cc. of gamma globulin and 129 retained as controls. In two of the former group, the disease developed within two days after injection and in six su -quently. In the same period, there were 22 cases among the controls. McLorinan (*M. J. Australia* **2**:390 [Sept. 9] 1950) reported seven failures of prophylaxis among 520 pregnant women given 4 cc. of hyperimmune globulin within eight days of exposure. On the other hand, Korns (*J. Infect. Dis.* **90**:183 [March-April] 1952) reported three trials, with the results respectively one apparently successful, one unsuccessful, and one equivocal. Bass (Advances in Internal Medicine, Chicago, Year Book Publishers, Inc., 1952, vol. 5), admitting the evidence for effectiveness is far from conclusive, nevertheless recommends giving 20 to 30 cc. as a prophylactic measure.

In the case of mumps, Gellis and associates (*Am. J. M. Sc.* **210**:661-664 [Nov.] 1945) have presented some evidence to show that hyperimmune gamma globulin may be of some value in preventing the development of orchitis after the onset of parotitis, whereas normal gamma globulin was of no value. On the other hand, Enders and Janeway (Viral and Rickettsial Infections of Man, ed. 2, J. B. Lippincott Company, 1952, p. 519) have shown that doses of convalescent serum up to 200 cc. do not protect and that the antibody titers of such serum are relatively low.

In weighing the evidence for the use of gamma globulin in these conditions, it is important to distinguish between studies done with hyperimmune (convalescent) globulin and with globulin derived from large donor pools. Only the latter is available for allocation. In view of these circumstances and of the critically limited supply of the material, the Office of Defense Mobilization has of necessity limited allocation to those conditions in which it is of established prophylactic value.

CONTAMINANTS THAT MAY PROVE FATAL

To the Editor:—*What organisms will grow on whole blood at refrigerator temperature and are found occasionally as contaminants that produce serious and sometimes fatal illness?* *Victor Gregory, M.D., Portland, Ore.*

Answer.—Organisms occasionally encountered as contaminants that will grow in banked refrigerated blood belong to several genera. The following organisms have been isolated from such a source: Micrococcus pyogenes aureus, Micrococcus pyogenes albus, Micrococcus citreus, alpha and beta hemolytic streptococci, Bacillus subtilis, Bacillus cereus, Bacillus mycoides, Pseudomonas aeruginosa, and species of Corynebacterium or Vibrio. Not all strains of these species can be expected to grow at low temperatures. Purposeful contamination of small quantities of citrated blood with dust or skin scrapings followed by storage of the blood in the refrigerator will yield the most satisfactory source of such organisms. All of these organisms are capable of producing serious illness if introduced intravenously in sufficient quantities with banked blood. Fatal and near fatal results from contamination with most of those listed have been observed. Further information may be obtained from the references below.

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BASEBALL "PITCHER'S ELBOW"

To the Editor:—*A 29-year-old baseball pitcher complains of chronic soreness of his right elbow ("pitcher's elbow"). The disability limits his playing time to about three innings. Can you give me any advice as to treatment and prognosis? Roentgenograms show no evidence of calcification.*

N. L. Masson, M.D., New York.

Answer.—"Pitcher's elbow" is usually associated with an incomplete rupture or tear of the tendinous attachments of either the extensor or the flexor group overlying its corresponding humeral epicondyle. In the beginning, rest and active exercise (pitching to the point of tolerance) should be permitted. Applications of external heat (infrared rays or diathermy), with gentle massage over the tender areas, may be given. Injection of procaine hydrochloride, 3 cc. of a 2% solution, into these areas may be done on alternate days. Graduated passive exercises to break up adhesions, either by abduction or adduction of the extended elbow with the wrist in supination, may be tried. Surgical treatment may be necessary as a last resort. This would consist of division and dissection of the attachments of the common extensor or flexor tendon group from the corresponding humeral epicondyle, with removal of any thickened or hypertrophied synovium or bursa from the radiohumeral joint. The prognosis depends on the duration and severity of the condition.

FRIEDREICH'S ATAXIA

To the Editor:—*A man, aged 34, has had hereditary cerebral ataxia for six years. Several cousins, aunts, and uncles have died from the disease, and his father has it. I have been unable to find help for him either through the literature or from consultants. Can you offer any suggestions?*

M.D., Maine.

Answer.—Presumably Friedreich's ataxia is meant, as there are no forms of "hereditary cerebal ataxia." Unfortunately, there is no known treatment of value for this condition, and the disease is likely to have a progressive course. All hereditary diseases show a tendency at times to become arrested spontaneously, and that possibility must always be held out to such patients as a hope.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

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